The prediction accuracy of Altman's model under financial distress conditions

An empirical study on Athens Stock Exchange

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I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

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Abstract

This dissertation was written as part of the MSc in International Accounting, Auditing and Financial Management at the International Hellenic University. The purpose of this paper is to examine if the Z-score model created by Edward Altman in 1968 can be used to make accurate predictions of corporate bankruptcy during economic recession periods. The first section presents a literature review of classic Z-score models. Afterwards, the model will be tested under disturbed macroeconomic circumstances like the ones in Greece for the years 2008-2016. The methodology used is the same as in Altman's model for public firms that published in 1968. In order to test the hypotheses a sample of thirty-three bankrupt and another thirty-three non-bankrupt companies will be used, all listed on the Athens Stock Exchange (ATHEXGROUP). The third part of the paper introduces the sample used and the data of both bankrupt and non-bankrupt firms are compared and presented. Finally, the last part of the paper presents the results of the examination and discusses the findings, comparing the accuracy of the model using present data to that of Altman's in 1968.

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Keywords: Financial distress, Altman's Z-Score models, Financial crisis, Athens Stock Exchange, discriminant analysis, Probability of default

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Preface

The outbreak of the global financial crisis in 2008 initiated one of the most serious international recessions in our time, leading to radical changes in the economy. As a consequence, there was a huge decline in Greece's gross domestic product and the financial collapse put Greek recession right up there with the worst depressions in financial history. In the first quarter of 2014, the decline in Greek GDP was roughly 33% and this was actually worse than the US peak-to-trough GDP decline of 27% between 1929 and 1933, during the most acute phase of the Great Depression.

During this crisis, the extent of financial distress grew as systematic risk, default rates and bankruptcies increased throughout the Greek economy. In this sense, the impact of the recent crisis provides a great opportunity to work on this thesis and study about corporate bankruptcy prediction models. Studying financial distress is of essential importance in order to make correct assessment on the financial state of companies and specifically in times of crisis. In spite of the vast research on corporate failure prediction models, the original Z-Score Model introduced by Altman has been the dominant model applied all over the world. Therefore, this paper will examine the accuracy of this model under financial distress conditions like the ones in Greece for the years 2008-2016.

Working on the paper has been educational and exiting. It has been especially motivating to work on issues of current interest and relevance.

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Introduction

The first multivariate corporate bankruptcy prediction model was developed by Edward Altman in the late 1960's. After his paper (1968), the multivariate model approach to bankruptcy prediction spread worldwide among researchers in banking, finance and credit risk. The bankruptcy prediction models are very important tools for investors, bankers, rating agencies, asset managers and for the firms themselves. The banking sector is especially interested in minimizing the amount of non-performing loans in order to maximize the profit and reduce their own probability of default. Asset manager investors should have valid tools for the selection of firms that they are going to have into their portfolios. Rating agencies need to have a tool to predict the probability of default because they estimate the risk of the companies. Moreover, Edward Altman has suggested that the management of distressed companies can apply the Altman Z score model as a guide to a financial turnaround.

The bankruptcy prediction approach has been evolving over time. Beaver (1966) used univariate analysis for selected ratios. He detected that some of them had good predictive power. Edward Altman moved forward since he developed a multiple discriminant analysis model called the Z-Score Model with five ratios. The next decades brought even more financial distress research. Ohlson (1980) used the logit model and Taffler (1984) developed a Z-score model for the U.K. which was summarized by Zmijewski in 1984. He used a probit approach in his model. In 1996, Dimitras et al. reviewed 47 studies on business prediction models and 13 of them were from the U.S.A. and nine from the U.K. They summarized the methods and the variety of ratios used.

The summary of different approximations to credit risk analysis was given by Saunders and Altman (1998). Ooghe and Balcaen reviewed models of corporate failure prediction. They classified 43 models presented in the literature into four categories: 1). Univariate model, 2). MDA models, 3). Risk index models, 4). Conditional probability models. Ravi and Kumar (2007) reviewed 128 artificial intelligence models for the bankruptcy prediction of firms and banks and observing that neural networks were the

most popular intelligence technique. Wood and Jackson (2013) presented the rate of the occurrence of the specific forecasting techniques in the prior literature. The most popular techniques were: 1) Multiple discriminant analysis (MDA), 2) Logit model, 3) Neural network, 4) Contingent claims and 5) Univariate analysis.

Recent noteworthy reviews on the effectiveness of the models have been delivered by Taffler and Agarwal (2008), Sarin (2009) and Bauer (2014), taking into account the performance of market based models, accounting based models, and hazard models. These types of models predominate in the finance literature. According to Taffler and Agarwal (2008) there is a difference in the predictive accuracy of and market based models and accounting based, nevertheless, the usage of accounting based models permits for a higher level of risk adjusted return on the credit activity. In Agarwal and Bauer (2014) hazard models that use both market and accounting information comparably to two other approaches: 1) the contingent claims based model using the Shumway and Bharath (2008) approach and 2) the Taffler's (1984) original accounting based Z score model that was tested in Taffler and Agarwal (2008). The hazard models were superior in U.K. data in ROC analysis and bankruptcy prediction accuracy because their default probabilities were close to the observed default rates.

In spite of the vast research on bankruptcy prediction models, the original Z Score {Altman (1968)} has been the prevailing model applied all over the world. The Z Score model has been in existence for more than 45 years, although it is still used as the main tool for financial distress prediction, both in research and practice. Our study is based on this classic model by Edward I. Altman (1968).

The purpose of this thesis is to test if the model created by Altman (1968) can be used to make accurate predictions of corporate bankruptcy in another operating environment and time period. Furthermore, the model will be tested under disturbed macroeconomic circumstances like the ones in Greece for the years 2008-2016. In order to test the hypotheses a sample of thirty-three bankrupt and another thirty-three non-bankrupt firms will be used, all listed on the Athens Stock Exchange (ATHEXGROUP).

The paper is structured as follows. Firstly, we review the literature on the classic Z Score Models and its versions Z Score for pubic firms and Z' Score model and Z'' Score for private firms. Then, in the next section we present the sample and methodology that are used for the purposes of the present research. Continuing, the data of both bankrupt and non-bankrupt companies are presented and compared. Afterwards, the paper presents the results of the test and discusses the findings. Finally, we compare the accuracy of the model using present data to that of Altman's paper.

Literature Review

E.I. Altman published his paper about corporate bankruptcy in 1968. At the time ratio analysis as an instrument of predicting corporate failure was heavily criticized by theorists. In this chapter is presented the literature review of Classic Z score models and its versions.

Classic Z-Score Models

Z-Score Model for public firms

Edward Altman (1968) criticized previous studies on financial difficulties and said that the adaptation of their results for the estimation of the potential failure of firms, both practically and theoretically, is questionable. The prevalent methodology was in essence univariate and focus was placed on individual signals of prospective difficulties. This made the ratio-analysis more vulnerable to faulty interpretation. As an extension, Altman suggested building upon univariate findings and to combining several measures into a significant predictive model. Afterwards, the question arises which ratios are most important in detecting failure potential and what weights should be attached to those selected ratios. Additionally, how should the weights be objectively established. As the appropriate statistical technique, he suggested the multiple discriminant analysis (MDA). It is a technique used to classify an observation into one of several a priori groupings dependent upon the individual characteristics of observations. For the adaptation of the model, it is very crucial how the sample of firms for the 2 groups of interest, non-bankrupt and bankrupt, and the variables of the model were originally selected. The initial sample was consisted of 66 companies with 33 in each of the two Groups. The Group 1 (bankrupt group) composed of manufacturers that filed a bankruptcy petition under the National Bankruptcy Act during the period 1946-1965. The mean asset size of these corporations was 6,4 million dollars, with a range of between 0,7-25,9 million dollars.

He recognized that the Group 1 was not homogenous with respect to industry and size, although all the companies were from manufacturing industries and relatively small. Therefore, Altman attempted to make a careful selection of Group 2 (non-bankrupt group). The second group consisted of a paired sample of manufacturing firms chosen on a stratified random basis. These companies were stratified by industry and size with the asset size range restricted to 1-25 million dollars. He eliminated both the small companies (less than 1 million dollars in total assets) and the large firms because of lack of data for small companies and of the rareness of bankruptcies in that period of large companies. Altman did not match the assets size of the 2 groups exactly and therefore companies in Group 2 are slightly larger than those in Group 1. The data collected for the companies in both groups were from the same years. For Group 1, the data was derived from financial statements one reporting period prior to bankruptcy. The average lead time of the financial statements was around seven and one-half months.

The financial ratios selected for model building were based on income statement and balance sheet data. In prior studies, a large number of variables were found to be significant indicators of financial difficulties. Consequently, Altman compiled a list of twenty-two potentially important ratios for evaluation. Altman classified these variables into 5 standard ratios categories: liquidity, leverage, profitability, solvency, and activity ratios. The financial ratios were chosen on the basis of their 1) potential relevancy to the study and 2) popularity in the literature. The list also included a few new ratios. Furthermore, he did not consider cash flow ratios because of precise depreciation data and the lack of consistent. From the list of twenty-two ratios, he selected 5 ratios for the profile as doing the best overall job in the prediction of bankruptcy. This profile did not include all of the most significant variables measured independently. Conversely, the contribution of the complete profile was evaluated. In order to arrive at a final profile of variables, he utilized the following procedures: 1) observation of the statistical significance of various alternative functions including determination of the relative contributions of each independent variable, 2) evaluation of inter-correlations

between the relevant variables, 3) observation of the predictive accuracy of the various profiles and 4) judgment of the analyst.

The final function estimated by Edward Altman (1968) is as follows:

$$Z = 0.012 \cdot X1 + 0.014 \cdot X2 + 0.033 \cdot X3 + 0.006 \cdot X4 + 0 .999 \cdot X5$$

Or

$$Z = 1.2X1 + 14X2 + 3.3X3 + 0.6X4 + 1.0X5$$

when the first 4 variables are expressed in decimals e.g. 0.20, rather than percentages e.g. 20%.

where

X1 = Working capital /Total assets

X2 = Retained Earnings/Total assets

X3 = Earnings before interest and taxes(EBIT)/Total assets

X4 = Market value of equity/Book value of total liabilities

X5 = Sales/Total assets

Z = Overall Index

X1: Working capital/Total assets ratio is a measure of the net liquid assets of the firm relevant to the total capitalization. Working capital is the difference between current assets and current liabilities. When a company is experiencing consistent operating losses, it will have shrinking current assets compared with total assets. This ratio proved to be the more valuable in analyses than the quick ratio and the current ratio.

X2: Retained Earnings/Total assets ratio refers to the earned surplus of a company over its entire life. This ratio is a measure of cumulative profitability over time and is one of the two (the other is the use of the market value of equity instead of the book value) new ratios evaluated by Edward Altman. It considers implicitly the age of the

corporation due to its cumulative nature and the use of leverage in the company's financing of its asset growth.

X3: Earnings before interest and taxes/Total assets ratio is a measure of the true profitability or productivity of the company's assets. It is not affected by any leverage or tax factors. This ratio reflects the earning power of the assets that defines the value of assets.

X4: The Market value of equity/Book value of total liabilities ratio shows how much the assets of a company can decline in value (measured by market value of equity + debt) before the liabilities exceed the assets and the company becomes insolvent. It adds a market value dimension to the model. The reciprocal of this ratio is the Debt/Equity ratio and used to measure leverage.

X5: Sales/Total Assets ratio is the standard capital turnover ratio illustrating the sales generating ability of the assets of a company. This ratio refers to the capability of management in dealing with the competition in the market. This ratio was dropped in the Z score model.

E.I. Altman evaluated the importance of the 5 ratios in several ways. First of all, he used the F-test to evaluate the univariate difference between the average values of the ratios in each group to the variability of values of the ratios within each group. Variables from X1 to X4 were all significant at the 0.001 p-level indicating significant difference in the variables between the groups. Although, X5 did not show any significant difference on a univariate basis. All 5 ratios indicated higher values for the Group 2 (non-bankrupt group) which is consistent with the positive signs of the discriminant function. Moreover, he determined the relative contribution of each variable to the total discriminating power of the function using the vector. In this vector, the X3 (profitability measure) showed the highest contribution while the X5 (Sales/Total assets ratio) gave the second highest contribution although it was insignificant on a univariate basis.

In order to explain this, he found a negative correlation between X3 and X5 (-0.78) in the Group 1 (bankrupt group). Negative correlations are more useful than positive correlations in adding new information to the function.

He explains that this negative correlation will occur when bankrupting companies suffer losses and deteriorate toward failure, and their assets are not replaced as much as they were in healthier times. Additionally, cumulative losses further reduce the asset size through debits to retained earnings. Therefore, the asset size reduction apparently dominates any sales movements.

Altman set a scale to classify whether a company should be considered bankrupt using the final score of his model. If the Z score of a company lied beneath 1.81 then the company was clearly a bankrupt entity. If the Z score was above 2.99 then the company was clearly non-bankrupt. The area of Z scores between 1.81 and 2.99 was defined as *grey area* (*grey zone*) and no classification could be made. After running some tests, he considered 2.675 as the critical value of Z score regarding the non-bankrupt classification.

Moreover, he introduced 2 types of errors in the final results. The Type I error occurs when a bankrupt company has a Z score that classifies it as non-bankrupt. The Type II error is the exact opposite, namely when a non-bankrupt firm's Z score is beneath 1.81.

Altman's Z-score test results indicated that bankruptcy could be predicted with an accuracy of 95% one year before it occurred ,72% two years before ,48% three years before, 29% four years before and 36% five years before it happens.

Z’-Score and Z’’-Score Moldels for private firms

The original Z Score Model was based on the market value of the company and was applicable only to publicly traded firms. Edward Altman emphasized that the Z-Score Model is a publicly traded firm model and *ad hoc* adjustments are not scientifically valid. Thus, he advocated a complete re-estimation of the model substituting the book value of equity instead of market value in variable X4. Using the same data, he extracted the following Z Score Model:

Revised Z-score model (1983):

$Z' = 0.717 \cdot X1 + 0.847 \cdot X2 + 3.107 \cdot X3 + 0.420 \cdot X4 + 0\ .998 \cdot X5$

where

X1 = Working capital/Total assets

X2 = Retained Earnings/Total assets

X3 = Earnings before interest and taxes(EBIT)/Total assets

X4 = Book value of equity/Book value of total liabilities

X5 = Sales/Total assets

The discrimination zones for Z’-score are different than the ones in the first model of Altman in 1968. If the Z’ score of a firm is less than 1.23 then the company is considered to be bankrupt. If the Z’ score is above 2.9 then the firm is considered to be non-bankrupt. Z’-scores between 1.23 and 2.9 belong to the grey area.

He did not examine the Z’ Score model on another sample due to lack of a private firm data base. Although, he analyzed the accuracy of a 4 variable Z’’-Score Model excluding the X5 (Sales/Total assets ratio) from the revised model because of a potential industry effect.

This kind of effect is more likely to take place when this kind of industry sensitive variable (asset turnover) is included into the model.

Therefore, in order to minimize the potential industry effect, he estimated the following 4 variable Z''-Score model:

$$Z'' = 3.25 + 6.56 \cdot X1 + 3.26 \cdot X2 + 6.72 \cdot X3 + 1.05 \cdot X4$$

where

X1 = Working capital/Total assets

X2 = Retained Earnings/Total assets.

X3 = Earnings before interest and taxes(EBIT)/Total assets

X4 = Book value of equity/Book value of total liabilities

The X3 ratio (EBIT/Total assets) again made the highest contribution to discrimination power in this version of model. The classification results for the Z''-Score Model were identical to the revised (Z'-Score model (five variable model). According this study, our empirical analysis is focused on the performance of the Z''-Score model in corporate bankruptcy prediction.

The discrimination zones for Z'' score are also different. If the Z'' score of a firm is above 2.6 then the company is considered to be safe. Z'' scores bellow 1.1 belong to the hazardous zone and finally Z'' scores between 1.1 and 2.6 belong to the grey area.

In concluding remarks, E.I. Altman (1983) regarded the general applicability of his Z-Score Model as debatable. He admitted that the model did not scrutinize very small and very large firms, the observation period was almost two decades (quite long) and the analysis included only manufacturing firms. He concluded as follows: *"Ideally, we would like to develop a bankruptcy predicting model utilizing a homogenous group of bankrupt companies and data as near to the present as possible."* Thus, Altman advised the analysts interested in practical utilization of the Z Score Model to be careful. This advisement deals with the versions Z'-Score and Z''-Score models of the original Z-Score model as well.

Research Design and Methodology

In this chapter the data, sample and methodology are presented. Furthermore, the selection of the companies and their separation into groups.

Data and Sample

As in Altman's paper, the sample should be consisted of firms listed on a stock exchange market. Moreover, for each bankrupt company there should be a non-bankrupt of the same size (regarding total assets) and operating in the same industry (sector). The group of bankrupt firms (Group 1) was collected totally randomly and then there was the matching with the non-bankrupt (Group 2) ones.

The final sample consists of 33 bankrupt and another 33 non-bankrupt firms. All the 66 companies were listed at the Athens stock exchange market. For each firm, data was collected for 5 years before bankruptcy took place and in the case of non-bankrupt firms the year that bankruptcy took place for the matching bankrupt firm of the pair. The years of the data are from 2003 to 2016. The source of the data is the website of the Athens stock exchange market and from Bloomberg database. Most of the data came from the annual financial report being published for each listed firm.

Finally, 2 groups formed the final sample. The Group 1 consists of bankrupt firms or firms whose operation is detained (all listed in ATHEXGROUP). Detained firms are not technically bankrupt, but still they are considered to be financially distressed and they are under suspension in the stock exchange market. In the most cases a firm whose operation is detained is considered to be almost bankrupt. The Group 2 consists of non-bankrupt companies. The definition of a non-bankrupt company is mainly this of a company that is fully operational, never listed for bankruptcy and its shares continue to be bought and sold in Athens stock exchange market.

Altman (1968) had set 2 main rules regarding the matching of bankrupt and non-bankrupt firms. Following his methodology, this paper uses these 2 main rules in order to compose the final sample:

1. The size of the firm: Both bankrupt and non-bankrupt firms should have their total assets on average almost equal.

2. The industry- sector: the firms of a pair must operate in the same industry.

The following tables present the two groups of the companies. In the parenthesis are depicted the ticket symbol of OASIS for each company. As mentioned previously, the first group (Group 1) consist of thirty-three bankrupt companies.

Bankrupt Companies - Group 1

Table 1: Bankrupt Companies

"Year 0"	**Group 1 (bankrupt Companies)**
2015	MJ Maillis SA Industrial Packaging Systems & Technologies (MAIK GA)
2015	Hellenic Fish Farming SA (ELFIS GA)
2015	Mochlos SA (MOCHL GA)
2015	Spider Metal Industry N Petsios & Sons SA (SPID GA)
2015	Elektroniki Athinon SA (ELATH GA)
2015	Maritime Co of Lesvos (NEL GA)
2014	Shelman Hellenic-Swiss Wood (SELMK GA)
2013	Edrasis - C Psallidas Technicalco SA (EDRA GA)
2013	Hatzioannou SA (HATZK GA)
2013	Michaniki SA (MHXAK GA)
2013	Tropea Holding SA (TROP GA)
2013	Alsinco SA (ALSIN GA)
2013	Balkan Real Estate SA (BALK GA)
2013	Sprider Stores SA (SPRDER GA)
2013	Nutriart SA (NUTRIART GA)
2012	Neorion Holdings SA (NEORS GA)
2012	Imperio-Argo Group Transport Co SA (IMPE GA)
2012	Ridenco Holdings SA (RIDE GA)
2012	Babis Vovos International Construction SA (VOVOS GA)
2011	IKONA-IHOS SA (IKONA GA)
2011	Alapis Holding Industrial & Commercial SA of Pharmaceutical Chemical Products (ALAPIS GA)

2011	Emporikos Desmos (EMDKO GA)
2011	XK Tegopoulos Publishing AE (TEGO GA)
2011	AG Petzetakis SA (PETZK GA)
2010	United Textiles SA (UTEX GA)
2010	C Cardassilaris & Sons-Cardico SA (KARD GA)
2010	Atermon Dynamic Communication Advertising Commercial and Constructing SA (ATERM GA)
2010	Praxitelio Hospital Medical Center of Excellence S.A (PRAXC GA)
2009	Microland Computers SA (MLAND GA)
2009	Sheet Steel Co (XALY GA)
2009	Maxim Knitwear Factory (MAXIM GA)
2008	Betanet SA (BETAN GA)
2008	Diekat SA (DIEKA GA)

The second group (Group 2) consist of thirty-three non-bankrupt companies.

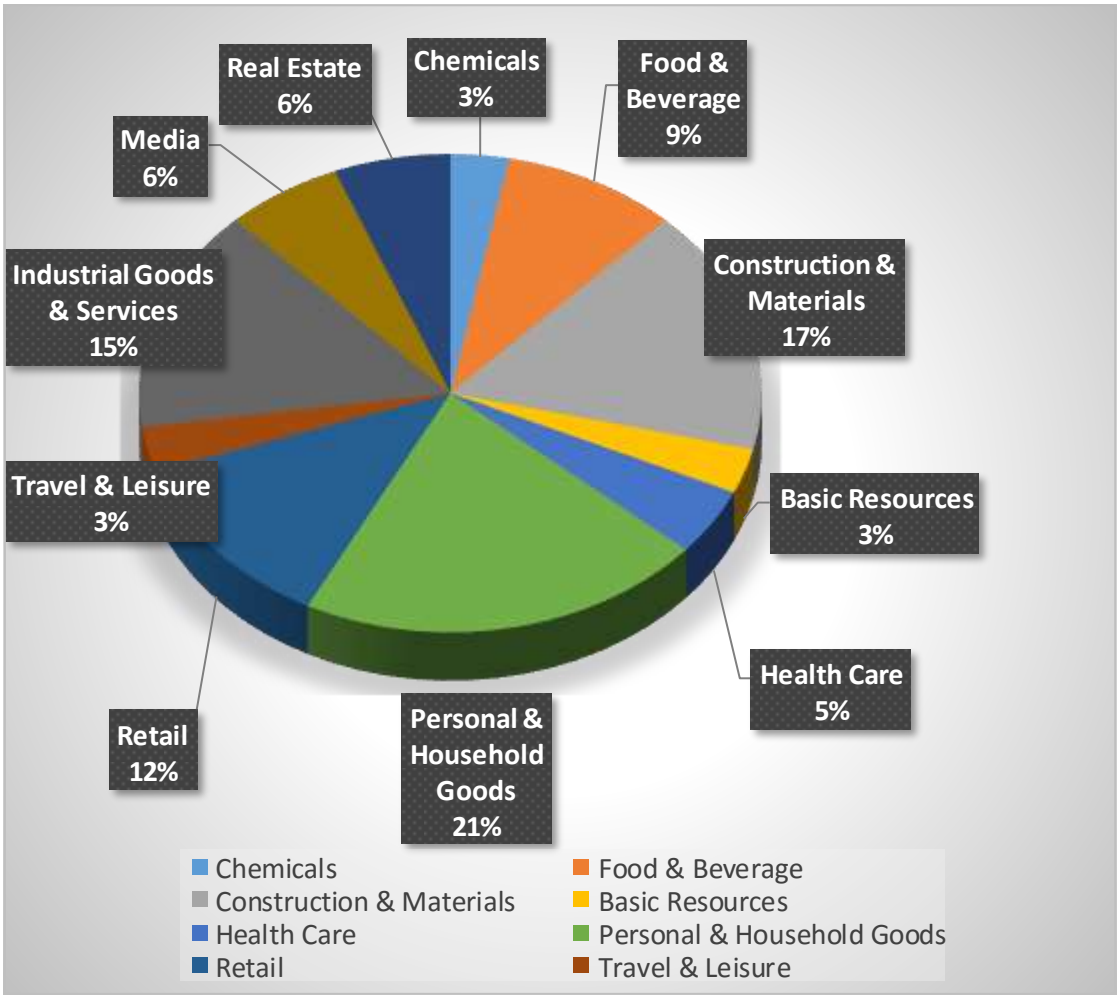
Non-bankrupt Companies - Group 2

Table 2: Non-bankrupt Companies

"Year 0"	**Group 2 (non-bankrupt companies)**
2015	Hellenic Cables Holdings SA (ELKA GA)
2015	Galaxidi Fish Farming SA (GMF GA)
2015	FHL I Kiriakidis Marbles - Granites SA (KYRM GA)
2015	Mevaco SA (MEVA GA)
2015	Revoil SA (REVOIL GA)
2015	Kiriakoulis Shipping SA (KYRI GA)
2014	Akritas SA (AKRIT GA)
2013	Bioter SA (BIOT GA)
2013	EL. D. MOUZAKIS SA (MOYZK GA)
2013	Athena SA (ATHINA GA)
2013	FG Europe SA (FGE GA)
2013	Duros SA (DUR GA)
2013	Elviemek Land Development - Logistics Parks - Energy - Recycling SA (ELBIO GA)
2013	Selected Textile Industries Association SA (EPIL GA)
2013	PG Nikas SA (NIKAS GA)
2012	Metka Industrial - Construction SA (METTK GA)
2012	Karatzis SA (KARTZ GA)
2012	Korres Natural Products (KORRES GA)
2012	LAMDA Development SA (LAMDA GA)
2011	Philippos Nakas SA (NAKAS GA)
2011	Titan Cement Co SA (TITK GA)

2011	Minerva KnitWear SA (MIN GA)
2011	Pegasus Publishing SA (PEGAS GA)
2011	Daios Plastics SA (DAIOS GA)
2010	Fourlis Holdings SA (FOYRK GA)
2010	Karamolengos Bakery SA (KMOL GA)
2010	Kathimerini Publishing SA (KATHI GA)
2010	Medicon Hellas SA (MEDIC GA)
2009	MLS Multimedia SA (MLS GA)
2009	Pipe Works L. Girakian Profil SA (PROFK GA)
2009	Elve SA (ELBE GA)
2008	Intracom SA Technical & Steel Constructions (INKAT GA)
2008	Thessaloniki Port Authority SA (OLTH GA)

The composition of the final sample



Graph 1: Composition of the final sample (%)

In Graph 1 is presented the composition of the sample regarding the industry. As mentioned previously, the firms of a pair must operate in the same industry. In the final sample, the greater percentage is held by companies that operate in the Household & Personal Goods sector (21%).This sector has been affected more by the financial crisis. Then, a large proportion of the final sample is held by companies that operating in the field of Construction and materials (17%), while the 15% of our selected firms, operate in the Industrial Goods and Services (15%) industry.

Methodology

The methodology used in this paper is the same as in Altman's paper in 1968. First of all, the sample was determined. It consists of 2 large groups. The Group 1 consists of thirty-three randomly selected firms, bankrupt or financially distressed companies. The Group 2 consists of thirty-three non-bankrupt firms. All 66 firms of the sample were listed in the Athens stock Exchange for the years of the study. The matching between non-bankrupt and bankrupt companies was made using 2 criteria. The first one is that the 2 companies that form a pair should be of same size regarding total assets. The second one is that both firms in a sample should be operating in the same industry. After matching the firms in Group 1 and Group 2 the model was determined. The model used is the same discriminant analysis model that used by E.I. Altman in his paper in 1968.

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$$

where:

X1 = Working capital/Total assets

X2= Retained earnings/Total assets

X3=Earnings before interest and taxes(EBIT)/Total assets

X4= Market value of equity/Book value of total debt

X5= Sales/Total assets.

The model attempts to calculate a firm's Z score using the (X1, X2, X3, X4, X5) ratios as independent variables. Then each firm is classified as non-bankrupt or bankrupt according to its final score. The Z score model is supposed to be able to predict bankruptcy up to 5 years before bankruptcy takes place.

If a firm's z-score is beneath 1.81 this firm is considered to be bankrupt. If the final Z score of a company is above 2.67 then this firm is considered to be non-bankrupt.

Values between 1.81 and 2.67 are considered to be in the so called *grey zone*. Firms whose Z score belongs to the *grey zone* means that these companies cannot be classified neither as non-bankrupt nor as bankrupt.

The X1 variable of the model is the working capital/ total assets ratio. This variable examines the short term liquidity of the firm regarding its assets. The working capital (WC) component of the ratios is the difference between current assets and current liabilities. According to theory a company with successive losses will have relatively lower current assets regarding its total assets. This ratio is supposed to be one of the most reliable ratios regarding a company's liquidity and it is even better than quick ratio and current ratio.

The X2 variable of the model is the retained earnings/ total assets ratio. This financial ratio provides information about the cumulative profitability of the firm. This ratio is containing information about the age of a firm, because a relatively young firm will provide a low retained earnings/ total assets ratio because it is difficult for it to have formed retained earnings. Furthermore, it is a counter of leverage in the model. If the firm's retained earnings/ total assets ratio is relatively high, this can be interpreted as the firm uses a high amount of retained earnings to finance its operations instead of debt.

The X3 variable of the model is the earnings before interests and taxes/ total assets ratio. The purpose of this ratio is to calculate the productivity of a firm's assets, regardless of the level of leverage the company is using or any tax. Moreover, it can provide

information about the management of a company and whether the people running the company can use efficiently the assets of the company in order to produce the maximum results. Basically, the management of each company is trying to maximize the firm's EBIT with given assets.

Moving in with the forth variable, X4, we have the market value of equity/ book value of total debt ratio. The measure of this ratio shows how much the company's assets can decline in value (measured by market value of equity plus debt) before the liabilities exceed the assets and the company becomes insolvent. It inserts the market dimension to the model. We calculate the market value of equity which is part of the X4 ratio, the total number of common and premium stock is multiplied by the market price of the stocks. The denominator of the ratio book value of total debt is given by the balance sheet of each firm. E.I. Altman found that this ratio appears to be a more significant predictor of bankruptcy than other kind of ratios, such as net worth/ total debt.

The final ratio of the model (X5) total sales/ total assets ratio. It measures the total sales of a firm regarding its total assets. Therefore, this financial ratio is useful in measuring the management's ability to deal with competition. According to the theory, this ratio is the least significant in an individual level comparing with the other 4 ratios of the sample and it is not even statistically significant. The main reason of using it in the model is the highly importance when it comes to its relationship with the other independent variables of the model.

In order to come up with the final Z score of a company, the 5 ratios used for each firm are calculated using Microsoft Excel. Then, these ratios are inserted in the model and there are five Z scores per company, for each of the 5 years prior to bankruptcy. Afterwards the assessment of the Z scores takes place and each firm is classified as bankrupt or non-bankrupt.

It's very crucial to mention that this study is happening ex-post. Therefore, there are 2 types of errors in the results. The Type 1 error happens when a bankrupt firm gets a Z score by which it should be classified as non-bankrupt. The Type 2 error is the opposite

and occurs when a non-bankrupt firm's Z score indicate that this firm should be classified as bankrupt. These two types of errors are the main reason why the sample should be really symmetrical regarding the number and the size of non-bankrupt and bankrupt companies. For instance, if a sample contains a larger number of non-bankrupt companies, there will be way more Type 2 errors in the results.

Afterwards, the classification takes place and the final results are presented. Finally, a comparison of predicting accuracy between this paper and this of Altman's (1968) will be presented.

Data analysis and Results

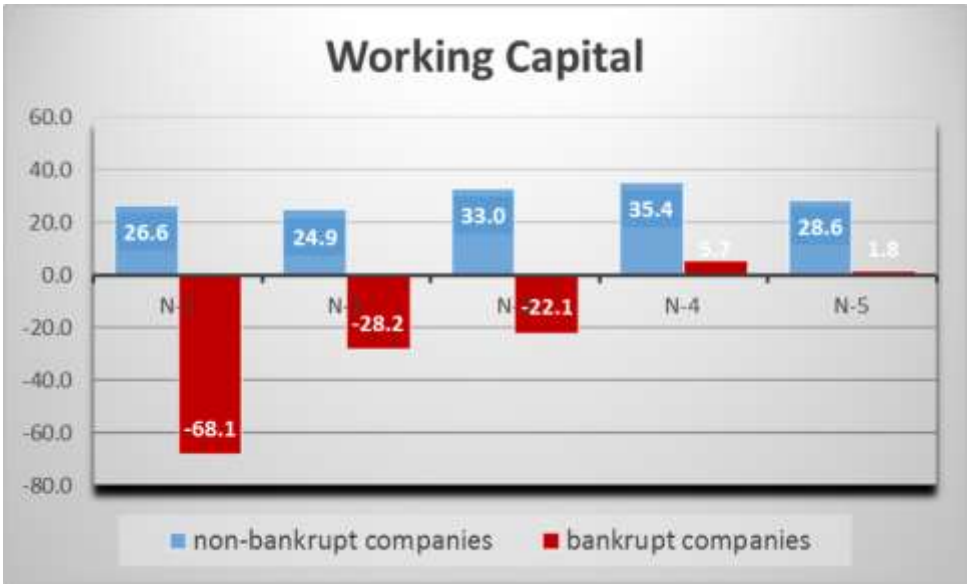
In this capter, the final Z-scores of the from both groups are presented.Additionally, there is comparison of the most crucial figures between Group 1 and Group 2. Finally, the accuracy of the model from the present sample is compared by the Altman's results.

Key Figures-Comparison between the groups

- **Working Capital**

The working capital (WC) is given by subtracting current liabilities from current assets. Generally, this financial ratio is useful providing information about the liquidity of the company. It is the most appropriate ratio of liquidity and major importance is given to it.

Graph 2: Working Capital (in millions)



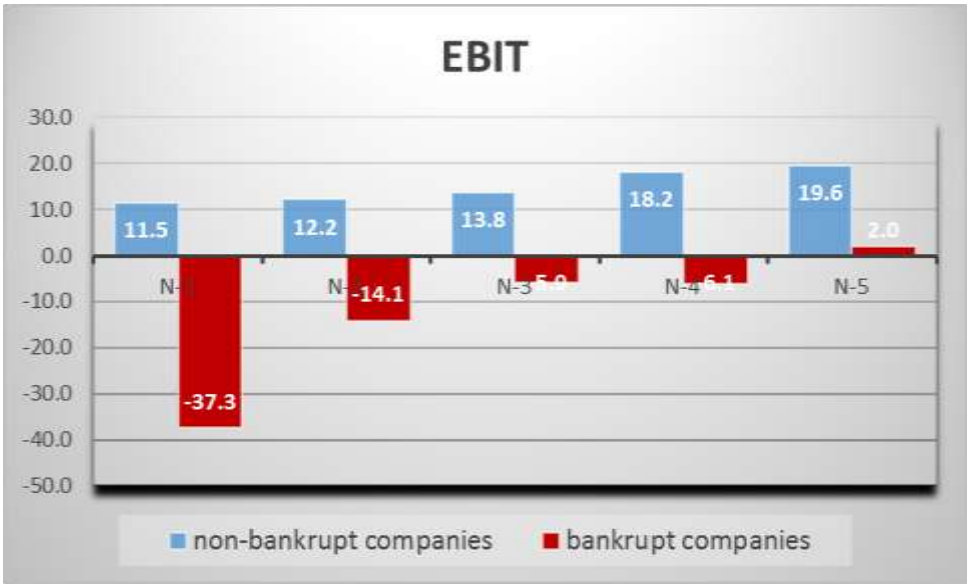
In the chart above is used the average prices of working capital for both bankrupt (red line) and non-bankrupt (blue line) firms for each of the 5 years before the bankruptcy. In the case of bankrupt firms, the average of their working capital over the years lies between 5.7 million euros (year N-4) and -68.1 million of euros (year N-1). On the other hand, the non-bankrupt firm's working capital ranges between 24.9 € millions (year N-2) and 35.4 € millions (year N-4).

According to the theory, an indicator of potential financial distress is a rise in current liabilities without an increase of at least the same amount in current assets. In the present chart a huge difference is observed among bankrupt and non-bankrupt firms. The bankrupt companies seem to have a significantly decreasing trend, while non-bankrupt companies seem to operate with generally linear trend of working capital. Other researchers are stated that Altman overweighed the importance of liquidity in his Z score model because the concept of borrowing changed in the next decades, with firms giving less importance to high levels of liquidity, using way bigger leverage. Thus, the working capital is an indicator of major importance in this paper.

- **Earnings Before Interest and Taxes (EBIT)**

Earnings before interest and taxes (EBIT) measures the profit a firm generates from its operations. By ignoring interest expenses and taxes, it tends to focus solely on a firm's ability to generate earnings from operations, ignoring variables such as the capital structure and tax burden.

Graph 3: Earnings before interest and taxes (in millions)



Graph 3 represents the average EBIT of both bankrupt (red line) and non-bankrupt (blue line) firms, for the five consecutive years prior to the bankruptcy. Regarding the bankrupt companies their EBIT ranges from -37.3 € millions (year N-1) to 2 € millions (year N-5). The range of average EBIT for non-bankrupt companies lies between 11.5 million of euros (year N-1) and 19.6 million of euros (year N-5).

One of the most important goals of a firm is to maximize its EBIT. The graph above shows that both bankrupt and non-bankrupt companies have a decreasing trend in their EBIT. The first ones even score negative EBIT for the years N-1 to N-4 which indicates poor financial condition. Regarding the non-bankrupt companies this declining trend is an alarm for their future stability because EBIT should be stable through the years if not increasing.

- **Market Capitalization**

Market value of equity is a synonym for market capitalization. In order to calculate the market capitalization, the number of both common and premium stocks is multiplied by the market price of the stocks. It is used to measure a firm's size and helps investors diversify their investments across companies of different levels of risk and different sizes.

Graph 4: Market Capitalization (in millions)

In Graph 4 are depicted the average capitalization of both samples. The market capitalization of bankrupt firms (red line), for five years prior to bankruptcy, range between 103.3 million of euros (year N-4) and 11.2 million of euros (year N-1). The blue line represents the average capitalization of non-bankrupt firms for five consecutive years. The observations range from 194.5 million € (year N-5) to 95.7 million € (year N-1).

The trend for both bankrupt and non-bankrupt companies is declining. This can be partially explained by the uncertain economic environment in Greece, considering that this paper tested during an economic recession period.

- **Total Liabilities**

Total liabilities refer to the aggregate of all debts a company is liable for and can be easily calculated by summing all short-term and long-term liabilities The following graph represents the average total liabilities for the 5 years prior to bankruptcy.

Graph 5: Total Liabilities (in millions)

The red line represents the average total liabilities for bankrupt companies. The trend seems to be stable and the observations lie between 128.1 € millions (year N-5) and 171.6 (year N-3). The blue line depicts the average total liabilities for non-bankrupt companies. The range of the observation is from 109.2 € millions (year N-5) and 163.9 € millions (year N-2).

We cannot observe so much difference between bankrupt and non-bankrupt firms in the above graph. Nevertheless, the bankrupt companies' total liabilities are slightly higher than non-bankrupt companies.

- **Total Sales**

Graph 6: Total Sales (in millions)

The Graph 6 represents the average total sales of both bankrupt (red line) and non-bankrupt (blue line) companies for five consecutive years before the financial distress. The observations of bankrupt companies range from 94.6 million of euros (year N-3) to 64.0 million of euros (year N-1). The range of the average total sales for non-bankrupt companies is from 149.6 € millions (year N-5) to 169.8 € millions (year N-1).

it is obvious that the average total sales of bankrupt companies are at least 68% less than those of non-bankrupt. It is meaningless to mention that the more the value of total sales the better the Z score of a firm.

To sum up, bankrupt firms underperformed in comparison with non-bankrupt. All bankrupt firms appear to have negative working capital, thus being vulnerable to liquidity problems. Regarding their profitability all bankrupt firms seem to have negative EBIT for 4 years before the bankruptcy took place. Moving in to the market capitalization, both bankrupt and non-bankrupt companies appear to face problems regarding their capitalization mainly because of the decrease of their stocks' market price. Furthermore, bankrupt companies have a slightly larger amount of total liabilities, indicating poor financial condition. In conclusion, as regards to total sales, both bankrupt and

non-bankrupt companies tend to lose in total sales, although there is a significant difference between the 2 groups.

Final Z-scores

The following tables present the final Z scores of both bankrupt and non-bankrupt firms respectively. The data used for the calculation of those Z scores came out of each company's balance sheets. In order to come out with the 5 variables of the Z score model Microsoft excel was used. As far as the methodology, the values of X1, X2, X3, X4 and X5 got inserted in Altman's formula:

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$$

Where,

X1 = Working capital/Total assets

X2= Retained earnings/Total assets

X3=Earnings before interest and taxes(EBIT)/Total assets

X4= Market value of equity/Book value of total debt

X5= Total Sales/Total assets

The following table presents the classification of a firm according to Altman's study (1968):

Table 3: Discrimination zones

Z-Score	**Classification**
Z-Score < 1.81	Bankrupt
1.81 < Z-Score < 2.67	Grey zone
Z-Score > 2.67	Non-bankrupt

Final Z-Scores of bankrupt firms

The following Table 4 contains the final Z scores of bankrupt firms for five consecutive years before the bankruptcy took place.

Table 4: *Final Z-Scores of bankrupt firms*

	Group 1- Bankrupt companies					
	"Year 0"	**N-1**	**N-2**	**N-3**	**N-4**	**N-5**
MAIK GA	2015	0.34	-2.05	-1.15	0.39	-1.36
ELFIS GA	2015	-1.91	0.26	0.89	0.90	0.88
MOCHL GA	2015	-0.83	-0.94	-0.92	0.41	0.63
SPID GA	2015	-2.63	-2.66	-1.89	-0.50	0.43
ELATH GA	2015	0.03	0.68	-4.46	0.89	1.40
NEL GA	2015	-3.17	-2.82	-3.52	-1.58	-0.06
SELMK GA	2014	-1.40	-0.95	-0.53	0.01	0.42
EDRA GA	2013	-2.55	-1.88	-1.18	-0.81	0.81
HATZK GA	2013	-1.65	0.24	0.52	1.20	1.64
MHXAK GA	2013	-0.56	-0.84	-0.03	0.06	1.14
TROP GA	2013	-1.95	-1.05	-0.24	0.22	0.55
ALSIN GA	2013	-2.46	-0.18	0.83	1.25	1.35
BALK GA	2013	1.03	1.14	1.65	1.85	4.73
SPRDER GA	2013	-1.85	0.74	1.43	2.15	2.67
NUTRIART GA	2013	-4.09	-2.96	-1.27	-0.01	0.06
NEORS GA	2012	-0.45	0.07	0.39	0.47	0.59
IMPE GA	2012	-1.85	0.74	1.43	2.15	2.67
RIDE GA	2012	-5.85	-1.10	0.84	0.79	1.18
VOVOS GA	2012	-0.38	-1.17	0.13	0.23	1.06
IKONA GA	2011	-3.15	-0.56	0.27	0.71	-0.07
ALAPIS GA	2011	-2.03	1.28	1.22	7.30	2.41
EMDKO GA	2011	-2.22	-0.92	0.44	0.53	0.48
TEGO GA	2011	0.06	1.04	1.18	1.29	1.58
PETZK GA	2011	-3.06	-0.60	-0.04	-0.32	-0.02
UTEX GA	2010	-4.97	-3.51	-1.63	-1.54	-1.11
KARD GA	2010	0.01	1.35	1.33	1.93	1.99
ATERM GA	2010	-1.30	-1.37	0.02	0.37	0.70
PRAXC GA	2010	-2.34	-0.39	0.64	0.56	0.39
MLAND GA	2009	-5.33	5.38	4.39	3.92	1.68
XALY GA	2009	-3.52	-0.26	-0.65	0.27	0.95
MAXIM GA	2009	-1.14	-0.34	-0.22	-0.14	0.95
BETAN GA	2008	0.51	1.30	1.40	1.81	1.93
DIEKA GA	2008	0.27	0.78	0.99	1.65	1.70

Average score	-1.83	-0.35	0.07	0.86	1.04
Maximum	1.03	5.38	4.39	7.30	4.73
Minimum	-5.85	-3.51	-4.46	-1.58	-1.36
Accuracy	100%	96.96%	96.96%	78.78%	81.81%
Type I error	0%	3.04%	3.04%	21.22%	18.19%

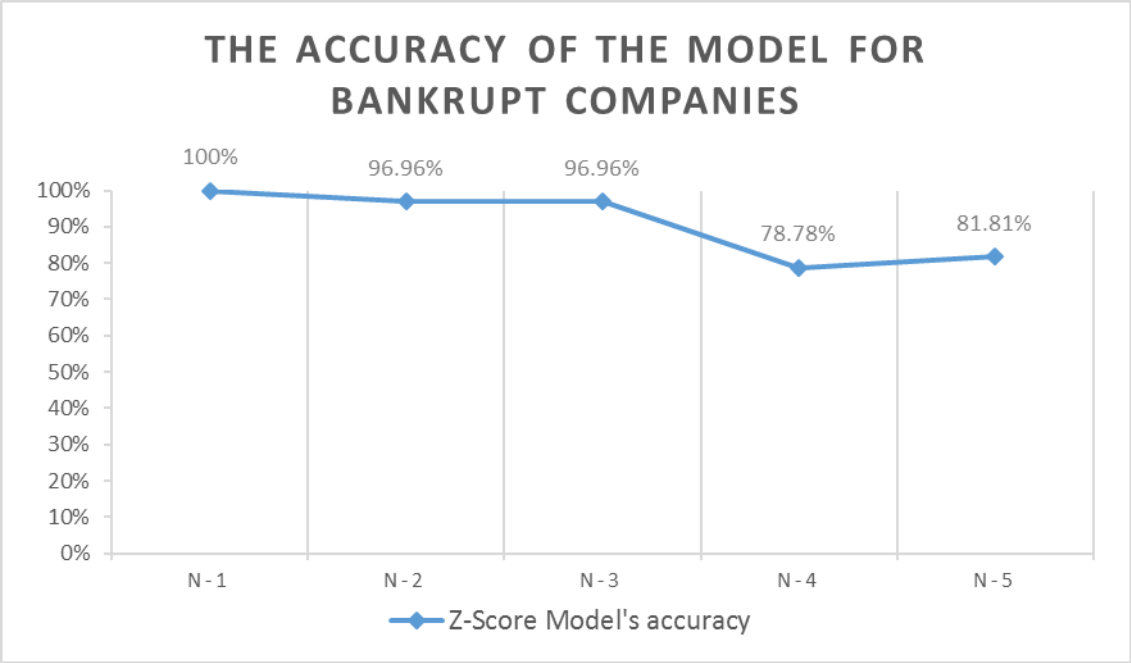
The "Year 0" is the year that the bankruptcy took place, so N-1 is the year before bankruptcy, N-2 is the year two years before bankruptcy and so on and so forth.

The reader can observe that the Z scores of bankrupt firms' trend to be negative, with some exceptions, for the years N-1 and N-2. The Z scores that are highlighted with yellow color state that this firm should be classified as non-bankrupt because its Z score is above 2.67. Every other not highlighted Z score is clearly beneath 1.81 so the *bankrupt* classification is correct. According to the N-1 year, the model is 100% accurate. The average Z score of bankrupt firms for this year is -1.83 which is 3.64 points before the *grey zone* and 4.5 before the safe zone of 2.67. The lowest observation is -5.85 and the highest 1.03. Proceeding to N-2 year, the model is 96.96% accurate and the average value for this year is -0.35. The lowest Z score is -3.51 and the highest 5.38. Again the only misclassification is MLAND GA. Moving to N-3 year it is becoming obvious to the reader that the accuracy of the model is the same. For this year the average Z score becomes positive (0.07) and the range of observations is narrower (-4.46, 4.39). As far as year N-4 (four years before bankruptcy), the average Z score of firms 0.86. Here there are 7 misclassifications and the five of them are into grey *zone*.

Edward Altman introduced the Type I error. According to him each misclassification of bankrupt firm as non-bankrupt is called Type I error. The Table 4 presents the Type I errors of the results. The percentage of Type I errors increases as the accuracy of the Z-Score model decreases. The more Type I errors are observed in the N-4 year (21.22%) and in the same year the accuracy of the model (78.78%) is the lowest among five years. The average percentage of accurate predictions is 91% for Group 1 of bankrupt firms. The average percentage of Type I error for the 5 years is 9%. The lowest Type I error (0%) is observed in N-1 year and at the same time the percentage of accurate predictions is 100%.

The following Table presents the accuracy of Z-score model regarding predictions of bankruptcy.

Graph 7: The accuracy of the model for Group 1



According Altman's (1968) study the percentage of accurate predictions decline from year N-2 to year N-4 and then it rises in year N-5. The percentage of accurate prediction is high for the first 2 years prior to bankruptcy which are the most relative. To sum up, the predictability of the Z-Score model for bankrupt companies seems to be sufficient.

Final Z-Scores of non-bankrupt firms

The following Table 5 presents the final Z-Scores of non-bankrupt firms for five consecutive years before bankruptcy occurred.

Table 5: Final Z-Scores of non-bankrupt firms

		Group 2 non-bankrupt				
	"Year 0"	N-1	N-2	N-3	N-4	N-5
ELKA GA	2015	0.78	1.18	1.76	1.83	2.06
GMF GA	2015	1.42	-1.61	-1.22	1.26	0.90
KYRM GA	2015	2.69	2.79	1.73	1.49	1.30
MEVA GA	2015	1.24	1.14	1.27	1.16	1.03
REVOIL GA	2015	6.90	7.09	8.12	7.38	6.82
KYRI GA	2015	0.71	0.68	0.71	0.51	0.45
AKRIT GA	2014	-0.39	0.17	0.36	0.54	0.69
BIOT GA	2013	-2.02	-0.52	-0.38	0.36	0.60
MOYZK GA	2013	0.35	0.35	0.69	0.83	0.94
ATHINA GA	2013	0.28	0.29	0.83	1.05	1.02
FGE GA	2013	1.27	1.14	1.67	1.80	1.49
DUR GA	2013	-0.86	-0.32	0.14	0.66	0.83
ELBIO GA	2013	1.27	0.75	0.63	0.89	0.87
EPIL GA	2013	0.36	0.62	0.47	0.48	0.79
NIKAS GA	2013	0.40	0.45	1.22	0.94	0.74
METTK GA	2012	3.45	2.79	2.79	4.04	4.36
KARTZ GA	2012	0.98	1.15	1.01	0.90	0.73
KORRES GA	2012	1.29	1.52	2.04	1.43	3.52
LAMDA GA	2012	0.58	0.74	1.11	0.88	1.57
NAKAS GA	2011	1.44	1.83	2.11	2.68	2.67
TITK GA	2011	1.91	1.90	1.94	3.53	4.77
MIN GA	2011	1.29	1.82	1.89	2.31	2.32
PEGAS GA	2011	0.20	1.00	1.01	1.20	1.12
DAIOS GA	2011	0.04	0.20	0.82	2.33	1.89
FOYRK GA	2010	2.54	2.16	4.14	3.71	3.13
KMOL GA	2010	0.76	0.71	0.75	0.55	0.57
KATHI GA	2010	1.68	2.02	2.99	3.06	3.05
MEDIC GA	2010	1.27	1.45	2.03	2.11	2.90
MLS GA	2009	4.52	5.18	4.74	5.90	9.86
PROFK GA	2009	1.19	1.59	1.59	1.32	1.88
ELBE GA	2009	2.42	2.95	2.96	3.25	3.55
INKAT GA	2008	1.63	1.41	1.07	1.92	2.68
OLTH GA	2008	10.50	6.87	4.39	3.32	3.56
Average score		1.58	1.56	1.74	1.99	2.26
Max		10.50	7.09	8.12	7.38	9.86
Min		-2.02	-1.61	-1.22	0.36	0.45
Accuracy		15.15%	18.18%	21.21%	27.27%	36.36%
Type II error		84.85%	81.82%	78.79%	72.73%	63.64%

In the case of Group 2 (non-bankrupt firms), the results indicate the existence of problems, either in the whole Greek economy or in the model itself. The years of the analysis include the years of the economic recession in Greece (2008-2016), so it is expected that the Z-Scores of non-bankrupt companies will be lower than in other studies that were conducted in different time periods.

In Table 5 highlighted with yellow color the Z-Scores of firms that are misclassified according to Altman's paper and should be financial distressed. Highlighted grey are firms that belong to the *grey zone* according to Altman's original paper. The white Z-Scores belong to non-bankrupt and out of danger firms.

According to the results of our study, the average Z-Score of non-bankrupt firms among the five years prior to bankruptcy is 1.82, which actually belongs to the *grey zone*. In N-1 year, the minimum Z-Score is -2.02 which is negative and The Maximum Z-Score is 10.5 which indicate a healthy company. It is obvious from table that the accuracy of the model regarding non-bankrupt firms is really low. In N-1 year the Z-Score model classified accurately only 15.15% of the firms and is significantly worse than in Altman's study. Moving to N-2 year the average score is decreasing slightly to 1.56 but still can be classified as score for bankrupt firms. In this year the highest Z-Score is 7.09 and the lowest observation is -1.61, but still negative. In this N-2 year the predicting accuracy of the Z-Score model remains extremely low (18.18%) but slightly increased in comparison to N-1 year.

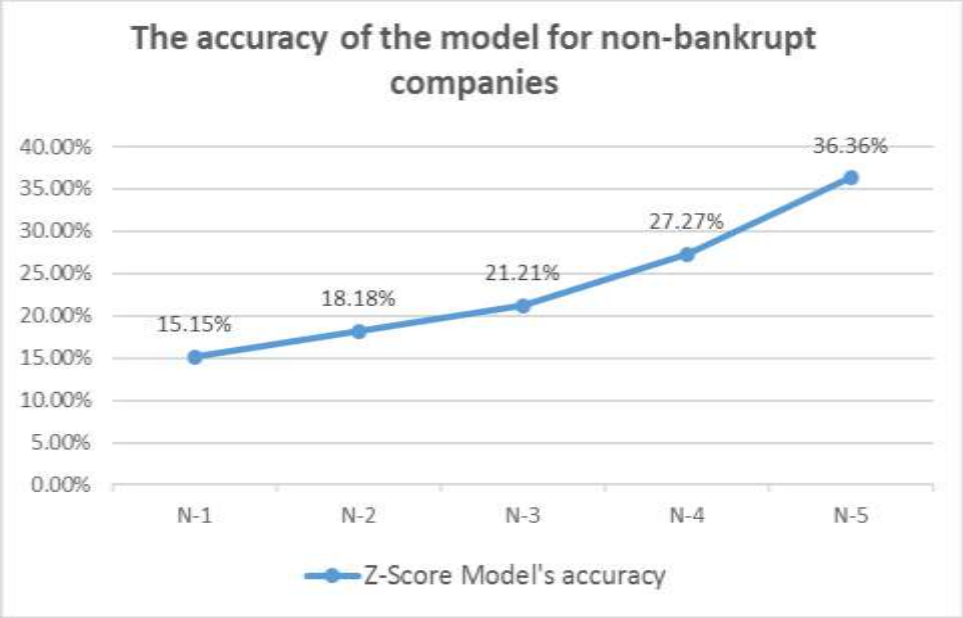
Continuing with N-3 year the average Z-Score is 1.74 which is similar to the one of N-2 year. The minimum score -1.22 which is very low for a non-bankrupt firm, while the maximum is 8.12. The predictability of the model in this year is 27.21%. Furthermore, the number of firms that can be put to the *grey zone* is five. In the N-4 year the average score is 1.99 and it overpasses the threshold of bankrupt classification. The lowest score in this year is 0.36 and the highest 7.38. Additionally, the accuracy of the model reaches 27.27%. Finally, for the N-5 year the average score for non-bankrupt firms is 2.26 which still belong to the *grey zone*. The minimum score is 0.45 and the maximum

9.86. The accuracy of the Z-Score model is the highest of all years and equals to 36.36%.

According to Altman's paper (1968), a non-bankrupt firm that should be classified as bankrupt is a Type II error. In the case of Group 2, it is made clear that the performance of the model is bad. Therefore, it is expected the model to produce a large number of Type II errors. In this case, the higher the predicting accuracy of the model, the lowest the amount of Type II errors. For instance, in N-5 year that the accuracy of the model is the highest (36.36%), the Type II error is 63.64%. This percentage is the lowest among the five years of the analysis. The average percentage of accurate predictions regarding the companies of the second group (non-bankrupt companies) is only 23.63%. Moreover, the average percentage of Type II error is 76.37%.

The following graph visualizes the percentage of accurate predictions regarding to the model.

Graph 7: The accuracy of the model for Group 2



The pattern in this graph is really opposite to the one in Altman's study. In our case, the accuracy of the model actually increases as moving backwards in time and the

highest percentage achieved in N-5 year. It becomes obvious that the average Z-Score of non-bankrupt firms is very low and the accuracy of the model is low too. Therefore, as the average score increases, the model's predicting accuracy increases too.

Interpretation of findings

The following Table 6 provides the total accuracy of the model.

Table 6: The accuracy of the Test

Year	**Total Number of companies**	**Correctly Predicted**	**Misclassifications**	**Number of companies *Grey Zone***	**Accuracy of the model %**
N-1	66	38	25	3	57.58%
N-2	66	38	23	5	57.58%
N-3	66	39	22	5	59.09%
N-4	66	35	21	10	53.03%
N-5	66	39	20	7	59.09%

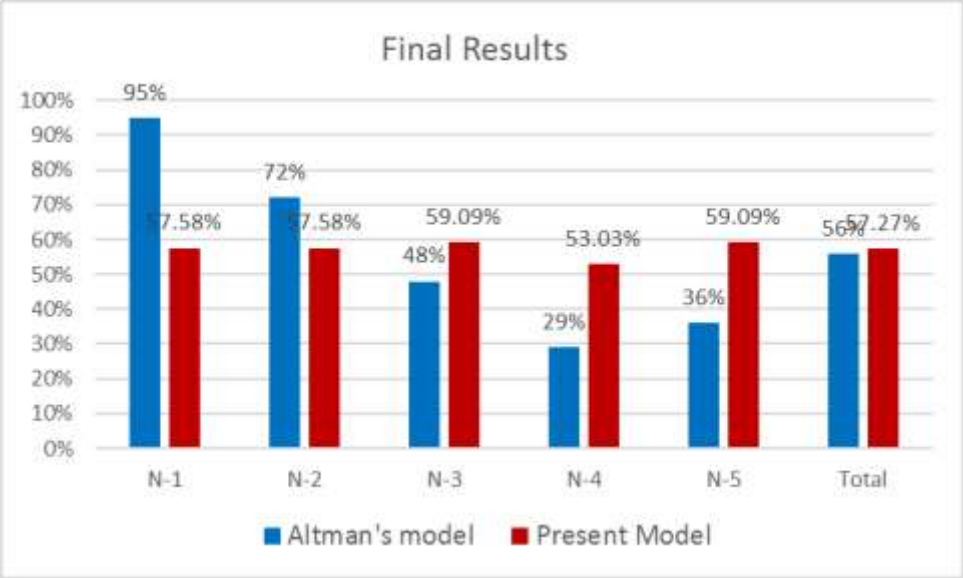
As being shown in Table 6 after combining the results of Group 1 and Group 2 companies, the accuracy of the model in classifying correctly the firms of the sample is reducing significantly. The highest percentage of correct predictions among the five years of the analysis is in N-3 year prior to bankruptcy. On the other hand, the lowest percentage of the model's accuracy is in the N-4 year and it is only 53.03%.

The following Table 7 and Graph 8 present both samples, in order the reader to able to compare the accuracy of Altman's results with present study.

Table 7: Altman's and Present Paper

Year	N-1	N-2	N-3	N-4	N-5	Total
Altman's Model	95%	72%	48%	29%	36%	56%
Present Model	57.58%	57.58%	59.09%	53.03%	59.09%	57.27%

Graph 8: Altman's and Present model



In general, the average accuracy in both samples seems to be very close, 57.27% in the present sample and 56% in Altman's sample. Although, Altman's model should be able to predict corporate bankruptcy in a very high percentage 1 and 2 years before it happens. This happening in Altman's sample, where the accuracy in predicting failure decreases from 95% in year N-1 to 29% in year N-4 and then rises again to 36%.

Although, the trend in the present study is more or less linear. The range is from 53.03% to 59.09%. As a result, Altman's model is not sufficient enough to predict corporate bankruptcy in the present sample. On the other hand, the model seemed to be

very accurate in the case of bankrupt companies, the prediction accuracy regarding Group 1 firms is 91% on average. The model performed really bad in the case of Group 2 firms, scoring only 23.63% on average. This means that the model overreacts. Furthermore, it is obvious that the scores of bankrupt firms, specifically in the years N-1 and N-2 are well below 0. This point out that the coefficients of Z-Score model should be re-estimated in order to be able to produce more accurate predictions regarding to Greek firms. Additionally, the financial distress conditions in Greece is worsening the financial data of both bankrupt and non-bankrupt firms. This is another case that the model needs to be re-estimated. Furthermore, the coefficients of Altman's paper were estimated in a significantly different time period and economic environment. Although, he states that the selection of the sample was pretty much random as to bankrupt companies, another sampling of bankrupt companies will not give identical coefficients because the proportion of companies from each industry will change. The structure of the economy has changed significantly from 1968. Nowadays, firms tend to form greater amount of debts than in the period of Altman's research, using more leverage. This change in the capital structure of the companies creates problems in the original Z-Score model, because of X1 and X2 variables which they use the liabilities in their ratio. Therefore, the z-scores of the companies tend to be smaller.

Conclusions and Recommendations

The purpose of this study was to examine if Altman's Z-Score model (1968) can predict corporate failures in the Greek financial environment of the last years. The sample used in this paper consisted of thirty-three Greek firms, all listed on Athens Stock exchange. Thirty-three of these firms are bankrupt and the other thirty-three are non-bankrupt. The years of the data used are from 2003 to 2016. According to results of the study, the accurate classifications regarding the bankrupt firms (Group 1) were 91%. The model failed to classify correctly the non-bankrupt firms (Group 2). The average percentage accuracy in non-bankrupt classification is only 23.63%. The average percentage of accuracy in the whole sample is 57.27% which is close to the Altman's one (56%). Although, if someone look at the 2 years before bankruptcy (N-1, N-2) notice that the accuracy of the model in present study is 57.58% for both years, while in Altman's was 95% and 72%. Therefore, Altman's model cannot be used in order to make accurate predictions about corporate failures during the period under scrutiny.

There are some reasons that the model underperformed regarding the present sample. First of all, the period of the data contains the years of the economic recession in the Greek economy. According to the ratio presentation above, it is obvious that especially in the 2 years prior to bankruptcy, there is a reduction in all ratios. The phenomenon is more intense regarding the X4 variable, with a huge deterioration of the market capitalization and in the X5 variable, with a great reduction of the total sales. Therefore, we can assume that the original Altman's Z-Score model is not fitting in a disturbed economic environment.

Moreover, the sample that Altman used in his study consisted of US manufacturing firms and the data are from almost 50 years ago. The financial environment has changed several times since then and as a consequence the mentality of the firms worldwide. Nowadays, firms use higher debt to finance their activities. Additionally, the primary target of a company may differ depending on the market it operates and the current situation of the economy (e.g. increasing market share, maximizing sales,

creating competitive advantages). This affects the variables (X1, X2, X3, X4, X5) that are used by the model. Furthermore, the legal framework is very different among time periods, as well as, among the countries.

Finally, there can be differences concerning the number of firms of each industry used in the 2 models. The ratios of an industry can be remarkably different to those of another. Furthermore, Altman's study did not include retail firms in his sample and thus it is not safe to assume that this model can be used to all Greek firms. Edward Altman (2000) himself revisited his model in order to be able to use it on retail firms.

To sum up, the above reasons contribute to the assumption that Altman's Z-Score model is not effective in predicting corporate failure in the Greek economy for the years 2008-2016. The model has to be re-estimated and adjusted to the conditions and the structure of an economy in order to be efficient.

Further Research

For someone who is interested in testing corporate bankruptcy models, it is highly recommended to estimate the model for a specific industry (e.g. Airline Industry) or sector in a block of countries. For instance, in another stock exchange market or in the twenty-eight countries of the European Union. Secondly, he can use only a group of small and medium firms that are perceived to be the back bone of the Greek economy. Thirdly, he can introduce some new variables to the model which will be able to insert the notion of the macroeconomic environment. Additionally, someone can re-estimate the model in different time periods and compare the results to the original model. Finally, he can use a model of each category (univariate, multivariate, neuronal networks) and apply them to the same sample of firms, used in the present paper.

List of references

Altman, I.E. (1968) “Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy"¨. Journal of Finance 23(4), pp. 590-602.

Beaver, W. (1966) “Financial Ratios as Predictors of Failure”. Empirical Research in Accounting: Selected Studies 1966. Journal of Accounting Research 4, pp.70-113.

Beaver, W.H. (1968) “Market Price, Financial Ratios and the Prediction of Failure”. Journal of Accounting Research, pp.180-195.

Altman, I.E. (1984) “The Success of Business Failure Prediction Models, An International Survey”. Journal of Banking and Finance 8(2), pp. 163-200.

Altman, I.E., Haldeman G.R. and Narayanan, P. (1977) “Zeta Ana lysis: A New Model to identify Bankruptcy Risk of corporations”. Journal of Banking and Finance I, pp. 23-47.

Altman, I.E. (2000) “Predicting Financial Distress of Companies: Revisiting the Z-Score and Zeta Models”, pp. 68-123.

Balcaen, S. Ooghe, H. (2006) “35 years of studies on business failure: an overview of the classic statistical methodologies and their related problem”. British Accounting Review 38, pp. 76-97.

Deakin, E.B. (1972) “A Discriminant Analysis of Predators of Business Failure”. Journal of Accounting Research, pp. 165-189.

Begley, J. Ming, J. Watts, S. (1996)” Bankruptcy classification errors in the 1980s: An empirical analysis of Altman’s and Ohlson’s models”. Review of Accounting studies 1, pp. 265-288.

Dawkins, M.C. Bhattacharya, N. Smith, Bamber, L. (2007)” Systematic share price fluctuations after bankruptcy filings and the investors who drive them”. Journal of Financial and Quantitative Analysis 42, pp. 365–465.

Dimitras, A.I. Zanakis, S.H. Zopounidis, C. (1996) “Theory and methodology A survey of business failures with an emphasis on prediction methods and industrial applications”. European Journal of Operational Research 90, pp. 481–523.

Grice, J.S. Dugan, M.T. (2001). “The limitations of bankruptcy prediction models: Some cautions for the researcher”. Review of Quantitative Finance and Accounting 07, pp. 151–166.

Ohlson, J. (1980) “Financial ratios and probabilistic prediction of bankruptcy”. Journal of Accounting Research, pp. 98-123.

Ooghe, H. Balcaen, S. (2007) “Are failure prediction models widely usable? An empirical study using a Belgian dataset”. Multinational Finance Journal 11, pp. 27-78.

Taffler, R.J. (1984) “Empirical models for the monitoring of UK corporations.”. Journal of Banking and Finance 8, pp. 189-257.

Zhang, L. Altman, E.I. Yen, J. (2010) “Corporate financial distress diagnosis model and application in credit rating for listing firms in China”. Frontiers of Computer Science in China 4, pp. 210-256.

Zmijewski, M.E. (1984) “Methodological Issues Related to the Estimation of Financial Distress Prediction Models”. Journal of Accounting Research 22, pp. 53-84.

Fawad, H., Iqtidar A, Shakir U. and Madad, A. (2014) “Can Altman Z-score Model Predict Business Failures in Pakistan? Evidence from Textile Companies of Pakistan”. Journal of Economics and Sustainable Development, pp. 98-122.

Hayes, S., Hodge K. and Hughes, L. (2010) “A Study of the Efficacy of Altman’s Z to Predict Bankruptcy of Specialty Retail Firms Doing Business in Contemporary Times”. Economic and Business Journal, pp. 112-124.

Stepanyan, A. (2014) “Altman’s Z-Score in the Airline Business. Case Study of Major U.S. Carriers. Are they Potential Bankruptcy Candidates?”. International Journal of Advances in Management and Economics, pp. 13-20.

Wang, Y. and Campbell M. (2010). “Business failure prediction for publicly listed companies in China”. Journal of Business and Management 16, pp.72-87.

Karels, G. and Prakash A.J. (1987) “Multivariate normality and forecasting of business bankruptcy”. Journal of Business Finance and Accounting 14, pp. 571-585.

Grice, J.S. Dugan, M.T. (2001) “The limitations of bankruptcy prediction models: Some cautions for the researcher”. Review of Quantitative Finance and Accounting, pp. 141-160.

Appendix

Real Estate						
Balkan Real Estate SA (BALK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	1.0265	1.1352	1.6452	1.8456	4.7311
Total Assets	BS_TOT_ASSET	59.144	57.714	54.522	53.274	66.485
Last Price	PX_LAST	0.345	0.379	0.43	0.89	1.91
EBIT	EBIT	-0.444	-0.145	-0.294	-0.532	16.043
Working Capital	WORKING_CAPITAL	26.828	29.122	29.66	29.86	32.629
Current Market Cap	CUR_MKT_CAP	6.942	7.6261	8.6523	17.9083	38.4324
Revenue	SALES_REV_TURN	0	0	0	8.2214	16.747
Total Liabilities	BS_TOT_LIAB2	20.711	18.379	9.361	9.07	9.345
Retained Earnings	BS_PURE_RETAINED_EARNINGS	12.914	—	—	—	—
Food & Beverage						
C Cardassilaris & Sons-Cardico SA (KARD GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2005
Altman's Z-Score	ALTMAN_Z_SCORE	0.0144	1.3506	1.3258	1.9286	1.9885
Total Assets	BS_TOT_ASSET	94.3366	121.1879	129.8625	129.3187	127.9241
Last Price	PX_LAST	0.4	0.78	1.97	3.9142	5.1548
EBIT	EBIT	-3.636	3.9031	3.4921	2.1762	17.0317
Working Capital	WORKING_CAPITAL	-41.1318	5.6578	-25.8281	-7.3481	-4.8684
Current Market Cap	CUR_MKT_CAP	8.7682	17.0981	43.1844	86.3687	115.3045
Revenue	SALES_REV_TURN	73.8505	120.2263	145.541	171.918	234.798
Total Liabilities	BS_TOT_LIAB2	95.6333	103.1224	109.514	108.1428	107.832
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Real Estate						
Babis Vovos International Construction SA (VOVOS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	-0.383	-1.1669	0.1313	0.2314	1.0585
Total Assets	BS_TOT_ASSET	854.157	955.137	1277.742	1375.911	1423.644
Last Price	PX_LAST	0.44	1.6	4.39	8.96	20.36
EBIT	EBIT	9.69	-283.129	-70.733	-96.757	22.95
Working Capital	WORKING_CAPITAL	-248.678	-212.937	-145.642	-153.857	-19.235
Current Market Cap	CUR_MKT_CAP	14.9292	54.288	148.9527	304.0128	690.8148
Revenue	SALES_REV_TURN	34.064	46.755	53.934	52.863	101.293
Total Liabilities	BS_TOT_LIAB2	873.733	890.778	938.527	959.892	886.724
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-68.66	—	—	—	—

Personal & Household Goods						
Alsinco SA (ALSIN GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-2.4562	-0.1817	0.8269	1.2523	1.3521
Total Assets	BS_TOT_ASSET	7.5614	12.3404	18.6361	21.6947	20.1214
Last Price	PX_LAST	0.185	0.339	0.41	0.86	0.82
EBIT	EBIT	-2.6462	-1.3812	-0.3859	1.0032	1.0237
Working Capital	WORKING_CAPITAL	-2.8188	0.4135	2.0641	3.0325	3.1622
Current Market Cap	CUR_MKT_CAP	0.9296	1.7035	2.0603	4.3215	4.1205
Revenue	SALES_REV_TURN	1.5514	4.579	13.6664	16.053	15.9838
Total Liabilities	BS_TOT_LIAB2	9.7647	11.3305	15.5923	17.4479	15.9962
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Retail						
Elektroniki Athinon SA (ELATH GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		06/30/2014	06/30/2013	06/30/2012	06/30/2011	06/30/2010
Altman's Z-Score	ALTMAN_Z_SCORE	0.0323	0.6777	-4.4603	0.8863	1.3986
Total Assets	BS_TOT_ASSET	63.7234	68.9838	102.6456	88.0722	107.9673
Last Price	PX_LAST	0.48	0.48	0.529	0.66	3.96
EBIT	EBIT	-6.3023	-4.5342	-117.1262	-6.1728	-5.5903
Working Capital	WORKING_CAPITAL	-3.2705	3.5717	-35.8149	-28.3754	-20.5284
Current Market Cap	CUR_MKT_CAP	2.76	2.76	3.0417	3.795	22.77
Revenue	SALES_REV_TURN	72.9299	84.024	2.53	129.2272	164.9198
Total Liabilities	BS_TOT_LIAB2	81.0692	75.1192	76.5497	80.5337	88.9018
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-33.9214	-21.711	-12.3287	—	—
Travel & Leisure						
Maritime Co of Lesvos (NEL GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	-3.1706	-2.8158	-3.5153	-1.5784	-0.0626
Total Assets	BS_TOT_ASSET	74.8273	87.4925	135.859	189.8705	220.8561
Last Price	PX_LAST	0.021	0.076	0.112	0.068	0.3467
EBIT	EBIT	-24.179	-52.9983	-70.1638	-56.1107	-28.611
Working Capital	WORKING_CAPITAL	-29.7248	-9.0154	-73.3144	-31.6179	22.2249
Current Market Cap	CUR_MKT_CAP	5.3647	19.4149	28.6115	17.3713	88.5593
Revenue	SALES_REV_TURN	35.6203	51.5203	68.02	79.6661	56.445
Total Liabilities	BS_TOT_LIAB2	83.214	71.6545	199.5808	177.7661	147.7366
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-114.5029	-90.2781	-169.8379	—	—

Retail						
Microland Computers SA (MLAND GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2008	12/31/2007	12/31/2006	12/31/2005	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	-5.3322	5.3768	4.3903	3.9186	1.6824
Total Assets	BS_TOT_ASSET	14.0148	35.0163	37.5254	31.9	22.3853
Last Price	PX_LAST	0.73	7.14	6.68	6	0.24
EBIT	EBIT	-12.3882	2.4026	3.1596	0.944	-4.4657
Working Capital	WORKING_CAPITAL	-21.3646	0.9527	-3.0795	-6.992	-11.621
Current Market Cap	CUR_MKT_CAP	9.8952	96.7834	90.5474	81.33	3.0634
Revenue	SALES_REV_TURN	47.3653	85.3064	78.4146	64.08	84.7048
Total Liabilities	BS_TOT_LIAB2	27.7157	24.3338	28.5437	25.062	25.3847
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Construction & Materials						
Michaniki SA (MHXAK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-0.5626	-0.8363	-0.0265	0.0595	1.1356
Total Assets	BS_TOT_ASSET	428.085	438.863	506.329	563.127	638.358
Last Price	PX_LAST	0.332	0.22	0.33	1.119	1.2654
EBIT	EBIT	-0.902	-57.295	-28.934	-60.45	73.422
Working Capital	WORKING_CAPITAL	-67.218	-47.76	52.589	96.686	140.865
Current Market Cap	CUR_MKT_CAP	27.2612	18.5437	28.3219	102.8374	120.9396
Revenue	SALES_REV_TURN	29.185	37.092	69.734	149.975	230.942
Total Liabilities	BS_TOT_LIAB2	363.876	349.969	343.704	360.428	364.546
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Industrial Goods & Services						
Neorion Holdings SA (NEORS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	-0.4534	0.0715	0.3898	0.4743	0.5948
Total Assets	BS_TOT_ASSET	352.4881	363.9087	384.0679	312.9382	244.6364
Last Price	PX_LAST	0.269	0.65	1	0.48	1.65
EBIT	EBIT	-25.6319	-14.0897	-0.7731	-5.9078	-10.2413
Working Capital	WORKING_CAPITAL	-117.3667	-74.3261	-49.1013	-20.4211	-8.3983
Current Market Cap	CUR_MKT_CAP	6.3118	15.2515	23.4639	11.2627	38.7154
Revenue	SALES_REV_TURN	43.2878	105.406	142.3928	131.3842	115.8627
Total Liabilities	BS_TOT_LIAB2	313.3707	298.1822	311.113	238.8804	179.263
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

Construction & Materials						
Edrasis - C Psallidas Technicalco SA (EDRA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-2.5507	-1.8804	-1.1833	-0.8072	0.8106
Total Assets	BS_TOT_ASSET	131.166	146.404	158.191	180.906	216.324
Last Price	PX_LAST	0.15	0.048	0.32	0.84	1.44
EBIT	EBIT	-13.419	-16.421	-16.613	-22.836	9.555
Working Capital	WORKING_CAPITAL	-143.621	-118.898	-96.206	-76.726	14.296
Current Market Cap	CUR_MKT_CAP	1.1771	0.3767	2.5112	6.592	11.3005
Revenue	SALES_REV_TURN	10.168	8.911	31.726	52.212	108.15
Total Liabilities	BS_TOT_LIAB2	206.532	190.256	174.287	163.364	160.473
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-91.821	—	—	—	—
Personal & Household Goods						
United Textiles SA (UTEX GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2005
Altman's Z-Score	ALTMAN_Z_SCORE	-4.9738	-3.5068	-1.6259	-1.5412	-1.111
Total Assets	BS_TOT_ASSET	199.941	228.096	291.741	305.751	275.93
Last Price	PX_LAST	0.07	0.07	0.16	0.24	0.2
EBIT	EBIT	-50.747	-41.538	-21.492	-36.529	-39.311
Working Capital	WORKING_CAPITAL	-222.793	-183.982	-73.71	-65.715	-48.104
Current Market Cap	CUR_MKT_CAP	6.2731	6.2731	14.3386	17.0268	1.5023
Revenue	SALES_REV_TURN	3.131	29.851	74.664	64.586	97.528
Total Liabilities	BS_TOT_LIAB2	313.759	276.961	287.176	272.899	240.239
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Personal & Household Goods						
Tropea Holding SA (TROP GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-1.9521	-1.0508	-0.2377	0.2202	0.5504
Total Assets	BS_TOT_ASSET	80.5708	109.2867	141.1665	154.2698	183.6609
Last Price	PX_LAST	2	2.5	14	26	25
EBIT	EBIT	-9.7701	-1.8807	-0.4095	0.7447	-2.8151
Working Capital	WORKING_CAPITAL	-57.7729	-66.5293	-34.1324	-2.23	-0.2935
Current Market Cap	CUR_MKT_CAP	1.0217	1.2771	7.1518	13.2818	12.771
Revenue	SALES_REV_TURN	10.0051	14.6828	18.5851	20.3757	82.2407
Total Liabilities	BS_TOT_LIAB2	69.9133	79.6654	84.7386	86.5482	106.8555
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-47.4445	-31.8108	—	—	—

Personal & Household Goods						
Emporikos Desmos (EMDKO GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	-2.2185	-0.9189	0.4426	0.5261	0.4843
Total Assets	BS_TOT_ASSET	13.2601	26.3785	27.5743	29.6957	30.0795
Last Price	PX_LAST	0.08	0.09	0.12	0.25	0.25
EBIT	EBIT	-2.2577	-0.871	0.8051	-0.6211	0.9986
Working Capital	WORKING_CAPITAL	-2.5881	-7.0177	-5.9917	-1.1543	0.2972
Current Market Cap	CUR_MKT_CAP	2.134	2.3801	3.1537	6.4826	6.5299
Revenue	SALES_REV_TURN	0	3.0829	25.0182	21.3443	11.0016
Total Liabilities	BS_TOT_LIAB2	14.7686	24.2591	24.1178	24.3177	23.3333
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Personal & Household Goods						
Ridenco Holdings SA (RIDE GA) - alt						
In Millions of EUR except Per Share		FY 2011	FY 2010	FY 2009	FY 2008	FY 2007
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	-5.8467	-1.0982	0.8428	0.7894	1.1816
Total Assets	BS_TOT_ASSET	30.5594	72.6964	90.7904	87.4144	90.1083
Last Price	PX_LAST	0.025	0.08	0.3	0.45	1.246
EBIT	EBIT	-16.9968	-4.9966	-1.6854	-0.4446	3.3505
Working Capital	WORKING_CAPITAL	-45.4321	-19.035	14.1979	25.9863	24.9011
Current Market Cap	CUR_MKT_CAP	0.5765	1.8448	6.9179	10.3769	30.6694
Revenue	SALES_REV_TURN	39.2345	25.8149	47.7406	48.395	48.7717
Total Liabilities	BS_TOT_LIAB2	70.6564	79.1735	76.5058	68.0962	63.9043
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-76.3786	—	6.0694	—	—
Personal & Household Goods						
Maxim Knitwear Factory (MAXIM GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2008	12/31/2007	12/31/2006	12/31/2005	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	-1.1435	-0.3437	-0.2171	-0.1434	0.9547
Total Assets	BS_TOT_ASSET	29.7764	34.3545	36.0447	36.408	52.248
Last Price	PX_LAST	0.19	0.47	0.47	0.3	0.35
EBIT	EBIT	-3.9172	-2.9094	-1.736	-1.789	-0.3241
Working Capital	WORKING_CAPITAL	-2.7542	-0.6631	-2.2026	-0.276	4.334
Current Market Cap	CUR_MKT_CAP	2.8529	7.0571	7.0571	4.5045	5.2553
Revenue	SALES_REV_TURN	7.4143	9.2676	10.1636	10.593	9.352
Total Liabilities	BS_TOT_LIAB2	12.1536	12.0008	12.7944	11	6.327
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Industrial Goods & Services						
Diekat SA (DIEKA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2007	12/31/2006	12/31/2005	12/31/2004	12/31/2003
Altman's Z-Score	ALTMAN_Z_SCORE	0.2748	0.7841	0.9855	1.653	1.7017
Total Assets	BS_TOT_ASSET	99.9433	139.4081	132.861	143.5265	123.1395
Last Price	PX_LAST	0.83	1.26	1.35	1.4626	3.0006
EBIT	EBIT	-13.1539	9.1649	5.51	15.727	16.9469
Working Capital	WORKING_CAPITAL	-20.6537	-20.5758	-29.32	5.5177	1.0146
Current Market Cap	CUR_MKT_CAP	14.852	22.5464	19.2361	22.9409	51.0114
Revenue	SALES_REV_TURN	98.6967	88.6998	95.651	124.52	118.7294
Total Liabilities	BS_TOT_LIAB2	90.8618	121.9818	125.67	100.4081	91.115
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Source: Bloomberg	Right click to show data transparency (not supported for all values)					
Construction & Materials						
Betanet SA (BETAN GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2007	12/31/2006	12/31/2005	12/31/2004	12/31/2003
Altman's Z-Score	ALTMAN_Z_SCORE	0.5075	1.299	1.4032	1.813	1.9263
Total Assets	BS_TOT_ASSET	146.125	109.721	94.566	70.0915	62.8451
Last Price	PX_LAST	1.2612	2.7799	2.1681	2.0676	2.5286
EBIT	EBIT	5.271	4.45	6.823	5.6349	4.4092
Working Capital	WORKING_CAPITAL	-23.724	25.547	10.924	9.1157	19.1237
Current Market Cap	CUR_MKT_CAP	28.613	42.2691	34.2566	34.2566	43.353
Revenue	SALES_REV_TURN	25.173	21.954	29.206	26.4422	23.2372
Total Liabilities	BS_TOT_LIAB2	96.118	68.919	55.186	38.1635	36.3514
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Health Care						
Praxitelio Hospital Medical Center Of Excellence S.A (PRAXC GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	-2.3402	-0.3947	0.6367	0.5645	0.3897
Total Assets	BS_TOT_ASSET	12.0631	16.4539	16.6123	7.5172	16.5317
Last Price	PX_LAST	0.54	0.64	2.9	0.5	0.875
EBIT	EBIT	-3.7063	-2.3459	0.4306	-0.7245	-0.9912
Working Capital	WORKING_CAPITAL	-6.3623	-1.8427	-6.1318	-4.9006	-0.1865
Current Market Cap	CUR_MKT_CAP	5.8627	8.1241	30.9947	3.3869	5.927
Revenue	SALES_REV_TURN	3.1881	7.2981	2.2864	0.8342	3.6984
Total Liabilities	BS_TOT_LIAB2	19.9694	14.9722	12.1812	6.7735	9.8845
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-9.5513	—	—	—	—

Personal & Household Goods						
Hatzioannou SA (HATZK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-1.6517	0.2383	0.5151	1.199	1.6417
Total Assets	BS_TOT_ASSET	105.215	153.691	180.106	210.084	226.231
Last Price	PX_LAST	0.038	0.047	0.1	0.38	0.38
EBIT	EBIT	-32.461	-8.843	-22.343	-3.897	15.369
Working Capital	WORKING_CAPITAL	-61.688	-22.585	-1.205	29.826	49.183
Current Market Cap	CUR_MKT_CAP	2.724	3.3691	7.1684	27.2399	39.7887
Revenue	SALES_REV_TURN	81.936	117.983	186.357	192.224	193.899
Total Liabilities	BS_TOT_LIAB2	119.328	107.013	119.621	121.547	124.115
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-51.904	-20.781	—	—	—
Retail						
IKONA-IHOS SA (IKONA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	-3.1503	-0.5609	0.2724	0.7054	-0.0659
Total Assets	BS_TOT_ASSET	15.7923	23.1178	25.2236	27.2299	22.9218
Last Price	PX_LAST	0.04	0.15	0.32	0.61	0.2556
EBIT	EBIT	-5.9459	-2.0811	-0.1436	1.265	0.3212
Working Capital	WORKING_CAPITAL	-8.353	-4.7322	-1.5596	-0.2274	-4.7181
Current Market Cap	CUR_MKT_CAP	0.8344	3.129	6.6752	12.7246	2.086
Revenue	SALES_REV_TURN	13.9307	22.8039	26.0671	26.0875	22.6859
Total Liabilities	BS_TOT_LIAB2	19.6615	20.4941	20.1219	21.2116	23.8313
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Food & Beverage						
Nutriart SA (NUTRIART GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-4.0917	-2.962	-1.2739	-0.0117	0.06
Total Assets	BS_TOT_ASSET	81.4104	100.883	127.5391	176.4738	194.1129
Last Price	PX_LAST	0.098	0.057	0.24	0.45	0.77
EBIT	EBIT	-17.9891	-23.3989	-11.976	-2.2722	-4.561
Working Capital	WORKING_CAPITAL	-97.9818	-85.6848	-88.3343	-77.7819	-90.4605
Current Market Cap	CUR_MKT_CAP	4.1651	2.4226	10.2003	19.1256	16.17
Revenue	SALES_REV_TURN	20.2423	38.3024	79.2586	91.6952	117.1526
Total Liabilities	BS_TOT_LIAB2	170.4602	153.0913	141.0204	137.0225	163.4006
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Industrial Goods & Services						
Imperio-Argo Group Transport Co SA (IMPE GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	-1.8539	0.7399	1.4301	2.1533	2.6719
Total Assets	BS_TOT_ASSET	46.4823	86.8241	85.9239	84.3703	68.2706
Last Price	PX_LAST	0.035	0.29	0.62	0.77	3.184
EBIT	EBIT	-25.695	-2.9219	-1.8925	1.8239	0.8672
Working Capital	WORKING_CAPITAL	-48.2208	-11.79	-4.6302	2.5381	8.3198
Current Market Cap	CUR_MKT_CAP	1.2868	9.0025	13.1459	16.3263	51.3516
Revenue	SALES_REV_TURN	40.7369	54.4011	59.0385	60.3279	44.5616
Total Liabilities	BS_TOT_LIAB2	60.3706	65.3115	59.4327	51.133	40.7415
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Retail						
Sprider Stores SA (SPRDER GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-1.8539	0.7399	1.4301	2.1533	2.6719
Total Assets	BS_TOT_ASSET	77.355	115.257	136.001	155.211	164.567
Last Price	PX_LAST	0.04	0.151	0.81	3.42	4.29
EBIT	EBIT	-28.783	-6.049	-4.523	1.441	19.814
Working Capital	WORKING_CAPITAL	-53.332	-20.089	1.883	14.186	28.66
Current Market Cap	CUR_MKT_CAP	1.0505	3.9657	21.2728	89.8183	112.6668
Revenue	SALES_REV_TURN	77.075	110.325	144.432	163.882	154.072
Total Liabilities	BS_TOT_LIAB2	95.102	82.736	84.711	93.268	95.765
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Chemicals						
AG Petzetakis SA (PETZK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	-3.059	-0.6025	-0.0411	-0.3169	-0.0157
Total Assets	BS_TOT_ASSET	154.439	164.414	168.879	180.19	220.666
Last Price	PX_LAST	0.4	0.43	0.28	0.91	1.53
EBIT	EBIT	-23.605	-8.67	-4.585	2.426	5.273
Working Capital	WORKING_CAPITAL	-179.199	-4.968	3.269	-98.317	-85.171
Current Market Cap	CUR_MKT_CAP	12.325	15.658	28.985	32.8422	39.0246
Revenue	SALES_REV_TURN	89.016	111.521	156.096	167.893	182.193
Total Liabilities	BS_TOT_LIAB2	237.343	199.187	189.211	185.523	202.927
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

Construction & Materials						
Mochlos SA (MOCHL GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	-0.8314	-0.9394	-0.9207	0.4052	0.6285
Total Assets	BS_TOT_ASSET	95.2678	101.6135	113.5313	145.137	159.626
Last Price	PX_LAST	1.05	1.69	1.1	0.783	1.76
EBIT	EBIT	-2.7899	-10.8899	-20.7146	6.208	3.266
Working Capital	WORKING_CAPITAL	-8.2316	-6.2443	-5.1979	27.461	47.006
Current Market Cap	CUR_MKT_CAP	4.8175	7.754	5.0469	3.5925	8.0751
Revenue	SALES_REV_TURN	6.2938	2.689	5.427	27.45	38.263
Total Liabilities	BS_TOT_LIAB2	61.4973	60.748	56.6304	74.541	82.448
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-50.6403	-44.6382	-29.5953	-18.77	—
Food & Beverage						
Hellenic Fish Farming SA (ELFIS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	-1.913	0.259	0.8885	0.8975	0.8793
Total Assets	BS_TOT_ASSET	64.1739	80.7503	101.5683	99.8408	103.7831
Last Price	PX_LAST	0.078	0.076	0.079	0.09	0.08
EBIT	EBIT	-17.3617	-4.1411	4.306	3.5393	3.4958
Working Capital	WORKING_CAPITAL	-27.8905	30.6477	42.4024	47.9432	51.5216
Current Market Cap	CUR_MKT_CAP	2.3704	2.3096	2.4008	2.7351	2.4312
Revenue	SALES_REV_TURN	34.5843	37.4385	51.5345	47.0915	45.1488
Total Liabilities	BS_TOT_LIAB2	85.3445	84.4726	96.4567	95.238	99.474
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-46.751	-29.4592	-20.6556	—	—
Industrial Goods & Services						
MJ Maillis SA Industrial Packaging Systems & Technologies (MAIK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	0.3389	-2.047	-1.1543	0.3873	-1.3589
Total Assets	BS_TOT_ASSET	258.812	244.341	270.535	311.714	337.392
Last Price	PX_LAST	0.115	0.069	0.064	0.089	0.18
EBIT	EBIT	-6.774	-17.148	1.822	-2.879	-23.492
Working Capital	WORKING_CAPITAL	65.547	-190.527	-168.034	59.314	-195.505
Current Market Cap	CUR_MKT_CAP	37.1364	22.2818	20.6672	28.7404	13.1718
Revenue	SALES_REV_TURN	253.232	256.72	266.689	279.339	262.206
Total Liabilities	BS_TOT_LIAB2	179.687	323.144	319.388	304.581	362.079
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-188.828	-271.463	-237.838	—	—

Elviemek Land Development - Logistics Parks - Energy - Recycling SA (ELBIO GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	1.2654	0.7472	0.6288	0.8877	0.8693
Total Assets	BS_TOT_ASSET	46.2989	55.5851	55.3734	50.382	50.4114
Last Price	PX_LAST	3.58	3.7	3.7	3.9	3.58
EBIT	EBIT	0.4443	0.2812	-0.5342	-0.538	-0.3764
Working Capital	WORKING_CAPITAL	-0.5837	-1.0759	-3.8676	-0.501	-0.0404
Current Market Cap	CUR_MKT_CAP	25.3675	26.2178	26.2178	26.2162	24.0651
Revenue	SALES_REV_TURN	1.3443	1.0151	0.0035	0.0613	0.2011
Total Liabilities	BS_TOT_LIAB2	19.3273	21.3884	21.1316	16.8471	16.2063
Retained Earnings	BS_PURE_RETAINED_EARNINGS	14.2908	—	—	—	—
Karamolengos Bakery SA (KMOL GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	0.7555	0.7097	0.7482	0.5492	0.5694
Total Assets	BS_TOT_ASSET	117.3611	116.0553	109.7393	106.9884	95.9636
Last Price	PX_LAST	0.5557	0.7014	1.131	1.6486	1.6943
EBIT	EBIT	6.5107	5.8779	5.9246	4.6158	3.3573
Working Capital	WORKING_CAPITAL	-5.0801	-6.0849	-7.4599	-19.5833	-16.2653
Current Market Cap	CUR_MKT_CAP	6.9175	8.866	14.4195	21.1421	21.8241
Revenue	SALES_REV_TURN	67.0856	62.7797	59.2362	49.0276	43.7789
Total Liabilities	BS_TOT_LIAB2	81.9822	82.8502	77.412	75.4181	65.1241
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

LAMDA Development SA (LAMDA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	0.5847	0.7398	1.1108	0.8827	1.573
Total Assets	BS_TOT_ASSET	1002.659	1091.348	1207.986	1183.153	944.3527
Last Price	PX_LAST	2.271	3.5519	6.8858	3.8335	13.0084
EBIT	EBIT	-10.285	-5.359	57.395	78.4107	94.2237
Working Capital	WORKING_CAPITAL	217.601	281.264	340.83	214.6248	110.3245
Current Market Cap	CUR_MKT_CAP	110.6425	172.1569	333.7466	185.8062	630.5082
Revenue	SALES_REV_TURN	81.769	82.648	83.974	74.7651	86.8921
Total Liabilities	BS_TOT_LIAB2	648.118	688.219	721.267	715.2928	492.3387
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Duros SA (DUR GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-0.8554	-0.3249	0.1407	0.6605	0.8264
Total Assets	BS_TOT_ASSET	11.141	13.0674	15.2937	17.739	19.8646
Last Price	PX_LAST	0.642	0.374	1.1	1.15	0.98
EBIT	EBIT	-1.675	-1.6669	-2.1972	-1.6178	-0.9358
Working Capital	WORKING_CAPITAL	1.6122	2.9696	3.15	4.3467	3.7849
Current Market Cap	CUR_MKT_CAP	2.5432	1.4815	4.3574	4.5555	3.8821
Revenue	SALES_REV_TURN	3.9001	5.4921	7.0551	8.5182	9.1711
Total Liabilities	BS_TOT_LIAB2	7.685	7.7373	7.9725	7.927	8.069
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-8.4287	—	—	—	—
Revoil SA (REVOIL GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	6.904	7.0851	8.1198	7.3758	6.8212
Total Assets	BS_TOT_ASSET	105.7219	108.5357	111.9303	123.7587	114.7182
Last Price	PX_LAST	0.281	0.629	0.624	0.476	0.7309
EBIT	EBIT	1.7133	0.3874	0.0543	4.8095	4.9741
Working Capital	WORKING_CAPITAL	-26.499	-36.9599	-28.5643	-18.7408	-12.5461
Current Market Cap	CUR_MKT_CAP	6.2607	14.0141	13.9027	10.6053	16.9328
Revenue	SALES_REV_TURN	733.8894	782.0664	905.7147	903.2645	764.226
Total Liabilities	BS_TOT_LIAB2	91.6469	94.9472	92.9523	100.5123	92.8206
Retained Earnings	BS_PURE_RETAINED_EARNINGS	7.5111	9.1038	13.2937	—	—
Kiriakoulis Shipping SA (KYRI GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	0.7069	0.6761	0.7124	0.5111	0.4488
Total Assets	BS_TOT_ASSET	53.4793	60.4174	65.0349	68.1753	69.2038
Last Price	PX_LAST	0.638	0.791	0.8	0.499	0.43
EBIT	EBIT	1.0179	0.2061	0.6887	1.5579	1.1184
Working Capital	WORKING_CAPITAL	9.0378	11.632	14.5168	7.8781	5.1692
Current Market Cap	CUR_MKT_CAP	4.8457	6.0078	6.0762	3.79	3.2659
Revenue	SALES_REV_TURN	15.1	15.3288	15.1395	17.0626	18.4597
Total Liabilities	BS_TOT_LIAB2	33.7366	39.7145	43.8927	48.8992	50.4398
Retained Earnings	BS_PURE_RETAINED_EARNINGS	2.7716	3.8419	4.3427	—	—
MLS Multimedia SA (MLS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2008	12/31/2007	12/31/2006	12/31/2005	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	4.5248	5.1812	4.7409	5.8954	9.8635
Total Assets	BS_TOT_ASSET	18.5213	15.3988	13.4595	13.445	14.409
Last Price	PX_LAST	0.9029	0.9906	0.8592	0.8633	1.4404
EBIT	EBIT	2.2124	1.3931	-0.5092	0.497	1.5431
Working Capital	WORKING_CAPITAL	6.3092	6.6387	6.653	7.136	7.0057
Current Market Cap	CUR_MKT_CAP	12.1687	13.5065	11.737	11.9765	20.36
Revenue	SALES_REV_TURN	12.4313	7.068	3.643	3.04	4.2263
Total Liabilities	BS_TOT_LIAB2	5.0139	3.1898	2.2862	1.556	1.5791
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

Athena SA (ATHINA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	0.2838	0.2855	0.8303	1.0499	1.0188
Total Assets	BS_TOT_ASSET	266.2676	288.8832	349.2849	369.1027	365.1888
Last Price	PX_LAST	0.19	0.146	0.3	0.6	0.54
EBIT	EBIT	-2.9683	-11.5418	7.6523	7.0197	-4.8182
Working Capital	WORKING_CAPITAL	-5.5789	1.0369	25.6434	35.8361	56.3723
Current Market Cap	CUR_MKT_CAP	9.3391	7.1763	14.7459	29.4917	26.5426
Revenue	SALES_REV_TURN	102.2737	113.897	167.341	230.0254	237.1217
Total Liabilities	BS_TOT_LIAB2	210.1504	220.0987	241.576	252.896	252.9033
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-12.3793	—	—	—	—
Metka Industrial - Construction SA (METTK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	3.4475	2.7923	2.7852	4.0368	4.3562
Total Assets	BS_TOT_ASSET	786.939	807.698	482.763	334.9545	353.5033
Last Price	PX_LAST	4.7566	7.117	7.2214	4.6568	10.4652
EBIT	EBIT	156.473	128.955	55.794	61.5405	52.1792
Working Capital	WORKING_CAPITAL	361.213	265.171	113.003	145.6925	92.2417
Current Market Cap	CUR_MKT_CAP	309.6256	489.3746	507.0379	343.913	801.0782
Revenue	SALES_REV_TURN	1003.7	613.704	339.39	381.4722	284.2492
Total Liabilities	BS_TOT_LIAB2	447.863	557.291	309.494	176.9124	214.2731
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	217.004	—	—	—
Bioter SA (BIOT GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	-2.0202	-0.5164	-0.3838	0.361	0.5978
Total Assets	BS_TOT_ASSET	142.566	186.844	195.965	208.289	198.305
Last Price	PX_LAST	0.15	0.118	0.14	1.04	1.6
EBIT	EBIT	-33.526	-7.112	-17.788	2.895	7.408
Working Capital	WORKING_CAPITAL	-69.295	-32.124	-19.77	1.004	5.09
Current Market Cap	CUR_MKT_CAP	2.637	2.0744	2.4612	18.2829	28.1276
Revenue	SALES_REV_TURN	6.364	18.602	37.877	57.932	67.141
Total Liabilities	BS_TOT_LIAB2	143.135	150.525	143.723	139.635	126.579
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-72.975	—	—	—	—
Fourlis Holdings SA (FOYRK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2005
Altman's Z-Score	ALTMAN_Z_SCORE	2.5384	2.155	4.1419	3.7097	3.1316
Total Assets	BS_TOT_ASSET	592.22	639.633	536.472	386.47	330.939
Last Price	PX_LAST	8.8778	4.6395	24.7612	14.5539	10.2474
EBIT	EBIT	62.697	91.496	75.612	53.046	35.807
Working Capital	WORKING_CAPITAL	67.092	49.118	116.107	59.532	10.699
Current Market Cap	CUR_MKT_CAP	468.2572	254.7645	1380.8236	818.3036	583.9202
Revenue	SALES_REV_TURN	751.722	784.447	670.079	482.052	407.517
Total Liabilities	BS_TOT_LIAB2	376.757	436.935	385.434	272.271	236.588
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
FG Europe SA (FGE GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	1.2747	1.1359	1.6693	1.7982	1.4915
Total Assets	BS_TOT_ASSET	198.895	198.848	151.844	186.292	244.077
Last Price	PX_LAST	0.6092	0.4112	0.4479	0.9945	0.6799
EBIT	EBIT	10.617	8.89	9.029	14.691	24.078
Working Capital	WORKING_CAPITAL	42.328	57.93	74.5	86.67	81.93
Current Market Cap	CUR_MKT_CAP	35.9041	24.2353	26.4001	67.5843	50.6882
Revenue	SALES_REV_TURN	111.122	99.724	96.371	121.843	144.555
Total Liabilities	BS_TOT_LIAB2	143.504	146.446	100.563	130.562	189.473
Retained Earnings	BS_PURE_RETAINED_EARNINGS	12.757	—	—	—	—

Minerva KnitWear SA (MIN GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	1.2855	1.8212	1.8895	2.312	2.3201
Total Assets	BS_TOT_ASSET	39.582	40.799	42.977	41.271	38.856
Last Price	PX_LAST	1.04	1.3926	0.7375	2.6403	2.4401
EBIT	EBIT	-1.051	0.743	2.286	2.816	2.36
Working Capital	WORKING_CAPITAL	7.271	11.158	13.196	9.829	11.663
Current Market Cap	CUR_MKT_CAP	6.448	9.052	5.022	18.848	17.794
Revenue	SALES_REV_TURN	17.951	24.244	28.277	28.203	25.123
Total Liabilities	BS_TOT_LIAB2	20.381	19.664	21.39	20.054	18.847
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Korres Natural Products (KORRES GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	1.2935	1.5169	2.0445	1.4306	3.5213
Total Assets	BS_TOT_ASSET	90.7973	90.0081	94.5293	91.6489	49.5875
Last Price	PX_LAST	3.21	4.15	6.8563	4.9671	8.9283
EBIT	EBIT	1.5106	5.2741	7.4048	7.6356	5.4531
Working Capital	WORKING_CAPITAL	14.6453	13.4578	22.8535	-2.353	9.9934
Current Market Cap	CUR_MKT_CAP	43.1745	47.9325	80.85	59.829	109.494
Revenue	SALES_REV_TURN	42.6798	44.1147	50.3657	53.7364	35.9779
Total Liabilities	BS_TOT_LIAB2	63.2529	65.7693	65.9834	70.6249	30.7188
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Elve SA (ELBE GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2008	12/31/2007	12/31/2006	12/31/2005	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	2.4234	2.9473	2.9568	3.2546	3.546
Total Assets	BS_TOT_ASSET	50.8887	46.7981	40.1272	38.97	36.424
Last Price	PX_LAST	2.9332	7.4778	5.8537	3.3545	2.7481
EBIT	EBIT	6.8915	6.4281	5.1502	4.774	3.171
Working Capital	WORKING_CAPITAL	15.2295	13.9016	11.9436	11.888	11.392
Current Market Cap	CUR_MKT_CAP	13.6269	36.3825	29.3706	17.4636	14.8176
Revenue	SALES_REV_TURN	65.9964	57.0446	50.9562	43.59	36.578
Total Liabilities	BS_TOT_LIAB2	26.7074	24.1986	19.8302	20.127	16.188
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Thessaloniki Port Authority SA (OLTH GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2007	12/31/2006	12/31/2005	12/31/2004	12/31/2003
Altman's Z-Score	ALTMAN_Z_SCORE	10.5004	6.8678	4.3893	3.3247	3.5645
Total Assets	BS_TOT_ASSET	136.5154	120.107	118.9305	116.6079	112.371
Last Price	PX_LAST	21.3815	10.92	6.5233	4.261	4.1181
EBIT	EBIT	16.1358	3.2378	4.0699	4.9475	3.372
Working Capital	WORKING_CAPITAL	55.373	44.8181	34.6254	29.5685	43.734
Current Market Cap	CUR_MKT_CAP	332.64	171.36	104.2272	69.7536	69.1488
Revenue	SALES_REV_TURN	66.285	45.9469	47.4622	45.7822	40.242
Total Liabilities	BS_TOT_LIAB2	21.8523	17.2963	17.743	16.8426	17.407
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Intracom SA Technical & Steel Constructions (INKAT GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2007	12/31/2006	12/31/2005	12/31/2004	12/31/2003
Altman's Z-Score	ALTMAN_Z_SCORE	1.6275	1.4122	1.0721	1.9247	2.678
Total Assets	BS_TOT_ASSET	196.1513	165.6638	131.8583	91.048	81.83
Last Price	PX_LAST	4.4529	4.3093	3.5551	3.4389	5.1928
EBIT	EBIT	6.399	-2.48	-0.3274	6.193	5.557
Working Capital	WORKING_CAPITAL	41.9354	40.6678	25.828	48.801	20.459
Current Market Cap	CUR_MKT_CAP	60.2718	58.3276	27.72	29.12	48.16
Revenue	SALES_REV_TURN	152.0344	103.6999	42.4702	46.95	53.403
Total Liabilities	BS_TOT_LIAB2	125.3457	100.1055	63.4819	42.583	42.988
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

Medicon Hellas SA (MEDIC GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2005
Altman's Z-Score	ALTMAN_Z_SCORE	1.2735	1.4455	2.0308	2.111	2.8954
Total Assets	BS_TOT_ASSET	64.5225	56.1151	47.3015	37.8347	30.277
Last Price	PX_LAST	2.8292	1.9148	2.7214	2.8129	2.3233
EBIT	EBIT	3.5789	3.8504	3.9594	3.8668	3.537
Working Capital	WORKING_CAPITAL	20.3691	20.4418	27.3036	11.7077	10.935
Current Market Cap	CUR_MKT_CAP	15.2948	11.3666	17.3842	18.8886	16.7156
Revenue	SALES_REV_TURN	18.191	19.7393	19.3053	18.2433	17.98
Total Liabilities	BS_TOT_LIAB2	46.5041	38.7344	29.7852	20.6266	13.43
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
EL. D. MOUZAKIS SA (MOYZK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	0.3456	0.3464	0.6889	0.827	0.9445
Total Assets	BS_TOT_ASSET	70.3467	70.1305	71.9199	80.2622	111.3056
Last Price	PX_LAST	0.227	0.189	0.23	0.4	0.57
EBIT	EBIT	-5.6237	-5.5437	-5.7313	-7.8102	-6.1778
Working Capital	WORKING_CAPITAL	5.6599	8.8534	14.0902	18.3531	17.7858
Current Market Cap	CUR_MKT_CAP	7.3067	6.0835	7.4032	12.8752	18.3472
Revenue	SALES_REV_TURN	16.0463	13.8978	19.766	18.1054	38.3669
Total Liabilities	BS_TOT_LIAB2	23.1885	22.8076	18.7786	21.4002	40.0849
Retained Earnings	BS_PURE_RETAINED_EARNINGS	4.8074	—	—	—	—
Philippos Nakas SA (NAKAS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		06/30/2010	06/30/2009	06/30/2008	06/30/2007	06/30/2006
Altman's Z-Score	ALTMAN_Z_SCORE	1.4391	1.8298	2.1071	2.6836	2.6706
Total Assets	BS_TOT_ASSET	32.7335	35.1079	37.3032	33.6899	31.2669
Last Price	PX_LAST	0.7808	1.579	2.3581	2.9798	2.0315
EBIT	EBIT	0.3255	1.3384	1.9662	1.2643	1.7345
Working Capital	WORKING_CAPITAL	7.893	8.141	9.6594	10.5601	11.281
Current Market Cap	CUR_MKT_CAP	5.389	11.0316	18.069	23.5848	16.801
Revenue	SALES_REV_TURN	27.1117	32.6773	33.3622	31.5932	31.3532
Total Liabilities	BS_TOT_LIAB2	11.5638	13.7666	15.245	12.0176	9.8829
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
PG Nikas SA (NIKAS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2012	12/31/2011	12/31/2010	12/31/2009	12/31/2008
Altman's Z-Score	ALTMAN_Z_SCORE	0.3965	0.4473	1.2177	0.9431	0.7379
Total Assets	BS_TOT_ASSET	86.8532	86.7655	95.2886	100.2972	105.6503
Last Price	PX_LAST	0.53	0.543	1.19	1.56	2.16
EBIT	EBIT	-1.6157	-6.153	3.6157	3.3807	-2.8915
Working Capital	WORKING_CAPITAL	-5.1585	-0.1794	-0.6548	-31.6079	-37.5098
Current Market Cap	CUR_MKT_CAP	10.7226	10.9856	24.0752	31.5608	43.6996
Revenue	SALES_REV_TURN	69.6302	72.4517	87.6315	98.3157	100.353
Total Liabilities	BS_TOT_LIAB2	90.143	82.7283	81.0452	83.3231	86.509
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-21.4024	-14.3902	—	—	—
Karatzis SA (KARTZ GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2011	12/31/2010	12/31/2009	12/31/2008	12/31/2007
Altman's Z-Score	ALTMAN_Z_SCORE	0.9829	1.1545	1.0062	0.8992	0.7296
Total Assets	BS_TOT_ASSET	136.7809	109.4261	111.1425	120.0709	132.0779
Last Price	PX_LAST	1.9198	1.3419	1.2277	1.3324	1.9986
EBIT	EBIT	7.4107	5.8223	4.9961	3.2094	-2.2726
Working Capital	WORKING_CAPITAL	3.296	7.7869	5.4888	2.6393	4.1364
Current Market Cap	CUR_MKT_CAP	28.6256	20.6985	18.9369	20.5517	30.8276
Revenue	SALES_REV_TURN	62.6806	57.2301	56.3823	64.8707	60.6
Total Liabilities	BS_TOT_LIAB2	56.3293	33.9114	39.1212	50.6248	63.8137
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—

Selected Textile Industries Association SA (EPIL GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		06/30/2012	06/30/2011	06/30/2010	06/30/2009	06/30/2008
Altman's Z-Score	ALTMAN_Z_SCORE	0.3616	0.6204	0.4694	0.4777	0.7876
Total Assets	BS_TOT_ASSET	118.0285	124.4025	103.6147	93.5996	105.6917
Last Price	PX_LAST	0.417	0.41	0.37	0.46	0.43
EBIT	EBIT	-3.1142	0.4686	-7.582	-9.6358	-5.5039
Working Capital	WORKING_CAPITAL	9.1483	12.9705	18.4776	3.7936	-5.7099
Current Market Cap	CUR_MKT_CAP	21.7121	21.3476	19.6025	24.5085	22.9101
Revenue	SALES_REV_TURN	35.5768	42.3517	32.0594	29.996	48.8007
Total Liabilities	BS_TOT_LIAB2	92.4967	91.3793	69.3851	50.0775	50.5927
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Daios Plastics SA (DAIOS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	0.0362	0.2026	0.8201	2.3267	1.8856
Total Assets	BS_TOT_ASSET	170.6045	162.1244	121.3089	80.4512	69.5103
Last Price	PX_LAST	5.97	6.9	7.04	11.18	6.3494
EBIT	EBIT	-1.5501	1.4662	2.3561	1.3159	0.5245
Working Capital	WORKING_CAPITAL	-57.7604	-51.3244	-7.9871	7.7169	14.9214
Current Market Cap	CUR_MKT_CAP	89.55	103.5	105.6	167.7	95.4
Revenue	SALES_REV_TURN	19.2817	13.3424	16.9922	14.7955	13.3123
Total Liabilities	BS_TOT_LIAB2	149.4812	131.9916	91.1852	50.9905	40.5712
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Kathimerini Publishing SA (KATHI GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2009	12/31/2008	12/31/2007	12/31/2006	12/31/2005
Altman's Z-Score	ALTMAN_Z_SCORE	1.6752	2.0183	2.993	3.0607	3.0534
Total Assets	BS_TOT_ASSET	191.1391	202.2778	204.2303	195.4649	191.9155
Last Price	PX_LAST	22.0658	26.532	33.7484	28.8962	24.9587
EBIT	EBIT	-1.1447	0.6807	6.4328	2.146	3.2429
Working Capital	WORKING_CAPITAL	48.4769	42.5197	57.5178	74.7866	73.0935
Current Market Cap	CUR_MKT_CAP	84.83	102	136.34	122.06	109.14
Revenue	SALES_REV_TURN	90.7348	108.5463	133.4641	106.0083	83.0534
Total Liabilities	BS_TOT_LIAB2	79.7176	73.5355	58.3853	48.8773	42.1678
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Pegasus Publishing SA (PEGAS GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	0.2024	1.0015	1.0083	1.2044	1.1162
Total Assets	BS_TOT_ASSET	268.6219	333.0369	341.9274	267.6143	260.603
Last Price	PX_LAST	3.25	14.1	12.3	13.2	9.75
EBIT	EBIT	-27.6291	-8.7577	-11.3549	-2.6047	-1.7941
Working Capital	WORKING_CAPITAL	-35.7106	-5.9319	4.6506	6.9709	3.0637
Current Market Cap	CUR_MKT_CAP	30.4688	132.1875	115.3125	123.75	91.4063
Revenue	SALES_REV_TURN	162.498	227.8577	243.4581	197.0705	192.5432
Total Liabilities	BS_TOT_LIAB2	202.4359	235.442	230.9211	161.6357	145.4616
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Titan Cement Co SA (TITK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	1
12 Months Ending		12/31/2010	12/31/2009	12/31/2008	12/31/2007	12/31/2006
Altman's Z-Score	ALTMAN_Z_SCORE	1.9052	1.9024	1.935	3.5334	4.7651
Total Assets	BS_TOT_ASSET	3082.91	3005.62	3194.09	2325.864	1976.612
Last Price	PX_LAST	15.6536	19.1253	12.7801	27.9587	36.3548
EBIT	EBIT	193.188	216.276	267.055	329.697	396.54
Working Capital	WORKING_CAPITAL	155.024	-16.796	166.063	344.614	308.664
Current Market Cap	CUR_MKT_CAP	1332.2008	1669.398	1143.6675	2599.3042	3425.3129
Revenue	SALES_REV_TURN	1350.488	1360.571	1578.458	1496.915	1568.109
Total Liabilities	BS_TOT_LIAB2	1372.086	1545.432	1759.956	1130.925	876.253
Retained Earnings	BS_PURE_RETAINED_EARNINGS	819.133	739.218	—	—	885.478

Pipe Works L. Girakian Profil SA (PROFK GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2008	12/31/2007	12/31/2006	12/31/2005	12/31/2004
Altman's Z-Score	ALTMAN_Z_SCORE	1.1852	1.593	1.5876	1.3215	1.8772
Total Assets	BS_TOT_ASSET	56.3836	48.2228	48.095	46.6464	52.344
Last Price	PX_LAST	4.7	10.5	11.9376	10.3591	13.3389
EBIT	EBIT	1.5492	0.1031	2.4767	-0.3142	5.597
Working Capital	WORKING_CAPITAL	21.2181	26.8367	19.5146	18.3152	22.274
Current Market Cap	CUR_MKT_CAP	5.969	13.335	15.367	13.335	18.923
Revenue	SALES_REV_TURN	29.2134	30.8718	29.6855	28.1299	31.14
Total Liabilities	BS_TOT_LIAB2	28.91	31.2127	31.561	31.7827	30.425
Retained Earnings	BS_PURE_RETAINED_EARNINGS	—	—	—	—	—
Akritas SA (AKRIT GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2013	12/31/2012	12/31/2011	12/31/2010	12/31/2009
Altman's Z-Score	ALTMAN_Z_SCORE	-0.3933	0.1713	0.3602	0.5423	0.6854
Total Assets	BS_TOT_ASSET	85.5834	95.4058	107.4243	116.5127	124.6396
Last Price	PX_LAST	0.125	0.295	0.292	0.49	0.77
EBIT	EBIT	-9.3852	-6.2373	-4.9805	-2.5858	2.4644
Working Capital	WORKING_CAPITAL	-5.5699	-0.7343	9.4253	19.9847	15.8201
Current Market Cap	CUR_MKT_CAP	1.625	3.835	3.796	6.37	10.01
Revenue	SALES_REV_TURN	31.3664	42.4224	39.6652	40.1909	46.1914
Total Liabilities	BS_TOT_LIAB2	61.741	57.1072	59.3219	59.4409	62.1153
Retained Earnings	BS_PURE_RETAINED_EARNINGS	-20.5029	-6.0466	—	—	—
Mevaco SA (MEVA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	1.2394	1.1435	1.2688	1.1625	1.0334
Total Assets	BS_TOT_ASSET	47.5828	51.7242	57.3253	51.6728	44.1209
Last Price	PX_LAST	0.99	1.16	1.37	1.02	0.83
EBIT	EBIT	-0.9576	0.6936	2.3063	1.884	0.5
Working Capital	WORKING_CAPITAL	5.1399	7.2382	6.8504	5.9022	6.7492
Current Market Cap	CUR_MKT_CAP	10.395	12.18	14.385	10.71	8.715
Revenue	SALES_REV_TURN	19.1446	23.922	31.4264	29.6172	21.0245
Total Liabilities	BS_TOT_LIAB2	18.8948	20.1696	24.6107	19.4671	15.6955
Retained Earnings	BS_PURE_RETAINED_EARNINGS	14.9578	3.9086	3.7873	—	—
FHL I Kiriakidis Marbles - Granites SA (KYRM GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	2.6862	2.7885	1.7275	1.4916	1.2951
Total Assets	BS_TOT_ASSET	78.708	67.1792	71.5443	80.5541	84.0083
Last Price	PX_LAST	1.4201	0.8594	0.6604	0.2945	0.3397
EBIT	EBIT	16.5346	15.2359	6.5908	9.0971	5.195
Working Capital	WORKING_CAPITAL	11.5555	14.0909	12.8401	13.4013	9.8628
Current Market Cap	CUR_MKT_CAP	38.4255	25.0102	21.5427	10.8884	14.6155
Revenue	SALES_REV_TURN	43.9693	41.1471	34.7266	41.3026	53.2151
Total Liabilities	BS_TOT_LIAB2	31.195	22.7922	35.9461	45.5458	53.005
Retained Earnings	BS_PURE_RETAINED_EARNINGS	23.3996	15.7636	12.2303	—	—
Galaxidi Fish Farming SA (GMF GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	1.4169	-1.6126	-1.218	1.2624	0.9049
Total Assets	BS_TOT_ASSET	59.0953	53.5339	49.5482	52.4388	51.7031
Last Price	PX_LAST	0.35	0.349	0.496	0.393	0.34
EBIT	EBIT	2.1683	-35.5685	-28.8401	2.2463	1.5772
Working Capital	WORKING_CAPITAL	12.2337	10.1836	10.7721	9.788	8.8225
Current Market Cap	CUR_MKT_CAP	4.9267	4.9126	6.9819	5.532	4.786
Revenue	SALES_REV_TURN	42.5029	0.2426	0.1928	27.745	26.8482
Total Liabilities	BS_TOT_LIAB2	42.7869	34.6782	30.6012	36.576	36.6876
Retained Earnings	BS_PURE_RETAINED_EARNINGS	10.8041	10.1464	10.7529	10.3573	—

Hellenic Cables Holdings SA (ELKA GA) - alt						
In Millions of EUR except Per Share		N-1	N-2	N-3	N-4	N-5
12 Months Ending		12/31/2014	12/31/2013	12/31/2012	12/31/2011	12/31/2010
Altman's Z-Score	ALTMAN_Z_SCORE	0.783	1.1834	1.7563	1.8267	2.0623
Total Assets	BS_TOT_ASSET	437.6531	374.916	340.4073	346.0802	261.1984
Last Price	PX_LAST	0.635	1.71	1.86	1.14	0.95
EBIT	EBIT	-20.0331	-7.0673	2.1189	11.8159	5.1399
Working Capital	WORKING_CAPITAL	-20.8174	21.9589	13.0177	37.0262	47.6502
Current Market Cap	CUR_MKT_CAP	18.7619	50.5243	54.9563	31.0381	25.8651
Revenue	SALES_REV_TURN	359.4183	345.3454	439.3433	414.5934	351.884
Total Liabilities	BS_TOT_LIAB2	349.2118	292.0015	236.5754	229.965	156.4996
Retained Earnings	BS_PURE_RETAINED_EARNINGS	35.4601	29.9571	50.8522	—	—